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USEFUL RECEIPTS.

To Make Blacking.

Take 1½ oz. gum arabic, half an oz. copperas, 2 oz. muriatic acid (spirits of salt), and 4 oz.,, ivory black moistened with half oz. oil of vitriol diluted with three or four times its weight of water. Mix them well together, and then add 4 oz. of sugar candy, 1½ of sweet oil, and three pints of vinegar, which, being shaken, then spread lightly over the boots, and rub with a stiff brush until dry, when it will give a brilliant jet black.

The following is another method for rendering leather impervious to water:—

Dissolve 1 oz. of glue in 2 pints of water, and add 4 oz. of ivory black and 2 or 3 oz. of sugar, mix this with a solution of gum elastic (india rubber), and rosin prepared with spirits of turpentine and linseed oil. Having first moistened the leather with a decoction of oak bark, apply this composition which, when dry, will render the leather water proof. In the above preparations, lamp-black will answer when ivory-black cannot be obtained.

Cod Liver Oil.

A physician of eminence desires us to state that this nauseous medicine may be administered without the least disgust to a patient, by chewing and swallowing a small quantity of the roe of a smoked herring, both before and after taking the spoonful of oil. A piece of sardine will answer if herring is not paletable. The disguise is perfectly effectual, and the most delicate patient may thus use the physic with comfort.

[The above is taken from the "Charleston Mercury;" as the cod liver oil has become such a panacea for every ill that flesh is heir to, the above method of taking it with some relish may be of benefit to many invalids.

To Make Coffee.

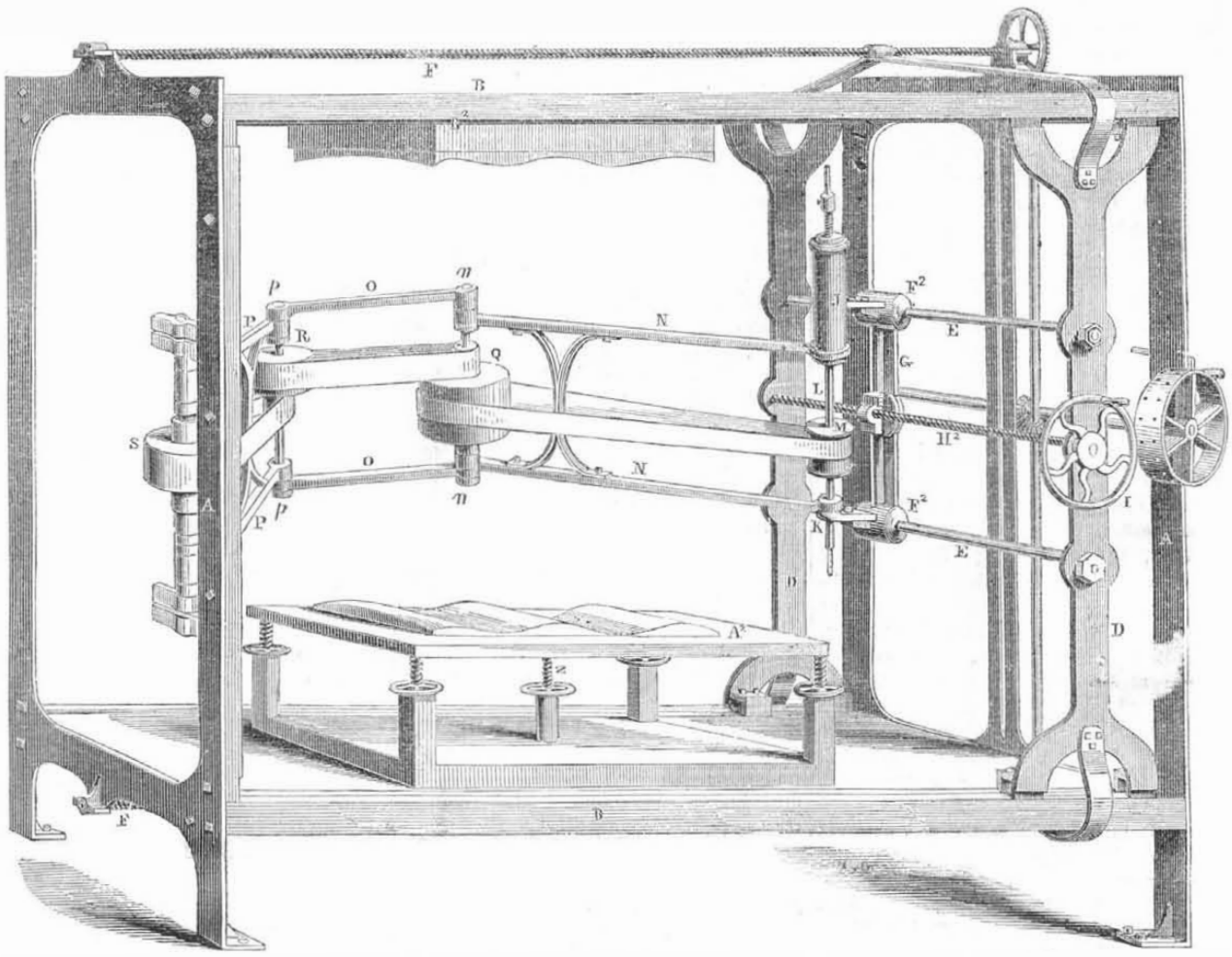
The best way of making coffee is to put the ground coffee into a wide-mouthed bottle over night, and pour rather more than half a pint of water upon each ounce and a half, to cork the bottle, in the morning to loosen the cork, put the bottle into a pan of water, and bring the water to a boiling heat; the coffee is then to be poured off clear, and the latter portion strained; that which is not drunk immediately is kept closely stoppered, and heated as it it wanted.

Bite of Mad Dogs.

An English journal says that an old Saxon has been using, for fifty years, and with perfect success, a remedy for the bite of mad dogs, by the agency of which "he has rescued many fellow-beings and cattle from the fearful death of hydrophobia." The remedy is to wash the wound immediately with warm vinegar or tepid water, dry it, and then apply a few drops of muriatic acid, which will destroy the poison of the saliva, or neutralize it, and the cure is effected.

"The Corner Stone," Columbus, Ga., has a sensible article on the trip of the Ericsson to Alexandria. The Editor says, "to our mind it [the Ericsson] is a dead failure."

BACON'S PATENT CARVING MACHINE.---Fig.1.



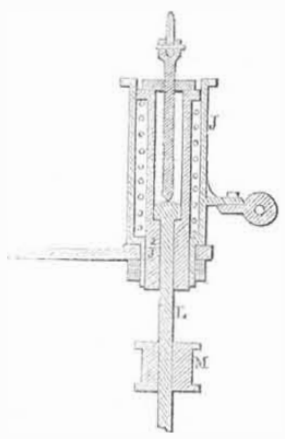
The annexed engravings are views of a carving machine for which a patent was granted to C. E. Bacon, of Buffalo, N. Y., on the 21st of last September.

The nature of the improvement consists in giving to a vertical or inclined cutter a motion laterally in any direction, at the same time it has a rapid rotary motion, for the purpose of carving from patterns or originals previously made.

Figure 1 is a perspective view of the whole machine for accomplishing the purpose; figure 2 is a vertical section of the cylinders, J and J^2, with their accompanying parts.

A A is an upright cast-iron frame; B B, B B are cast-iron ways. The uprights (sliding frame) D D, are connected together by the

FIG. 2.



rods or ways, E E, extending across from side to side, and slide upon the ways, B B, simultaneously, by the power of the screws, F F, upon the top and bottom of the frame.

Upon these ways or rods are the slides, F^2 F^2, connected by the bar, G. The nut, H, being bolted to the centre in the manner shown in the engraving. The object of this nut is to carry the guides or slides, F^2 F^2, gradually backward and forward upon the ways or rods, E E, by means of the screw, H^2, with hand wheel, I. Upon each of these slides are flanges by which they are bolted. The upper one to the cylinder, J, to a like flange or lip projecting from it, and the lower one to the bearing, K, of the cutter stock, L. This cutter stock or mandril, L, has the band wheel, M, upon it, by which it is driven. The arms, N N, O O, and P P, form a folding frame, with centres at *n n*, and *p p*, the centres in the upper part of the frame corresponding with those in the lower part as represented.

Between these two corresponding centres are the double band wheels Q and R, each firmly attached to a shaft which turns in bearings around which the ends of the arms, N N, O O, and P P, form the joints, so that their centres shall correspond, and the band wheels be kept at equal distances from each other, whatever position the folding frame may be made to assume. The double band wheel, S, turns, upon the same shaft upon which the two ends of the arms, P P, turn and receive their motion from the engine

The original pattern is placed on the lower side of the upper bed piece, A^2, and there is extended from the cutter to this pattern a non-revolving pointer or tracer, which, although it does not revolve, is attached to the mandril, which supports and revolves with the cutter. This pointer traces the curves, cavities, and irregularities of the original pattern, and guides the cutter to cut a new pattern in the wood placed on the lower bed piece, a^2.

In order to keep the tracer up to the pattern, and at the same time give it perfect liberty to rise and fall with the irregularities in the surface of the pattern, the cutter stock and cylinder, J, are constructed as follows, sectioned in figure 2.

J is an outside cylinder, with a circular shoulder in the inside near the bottom. Sliding through this outside cylinder is the cylinder, J^2, surrounded by a spiral spring which rests upon the shoulder above mentioned, and presses upon a similar one on the outside of J^2, near its top. The mandril, L, is prevented from sliding downward by a shoulder in the inside cylinder, upon which the head of the mandril rests, the tracer stock being screwed down to it, holds it to its place, and allows it to revolve freely, while the tracer and inside cylinder have only a vertical motion as they are acted upon by the spring and pattern, being prevented from turning by a feather and key seat. The cutter mandril has also the vertical motion with the inside cylinder.

By means of the sliding frame being moved longitudinally by the screws, F F, the folding frame already described may be pushed round through the end of the machine, and the cutter thus receive a longitudinal as well as lateral motion by the slides, F^2 F^2.

The sliding frame, screws, &c., may be detached from the cutter and folding frame, and the same may be governed by hand, and thus be made to cut almost any irregular form, and leave the work smooth and clean ready to sand paper. The lower platform or bed may be raised and lowered by the screw, Z in the centre as represented and the corners set by those shown on the corners of the same, for the purpose of adjusting the work to the cutter.

Various kinds of cutters may be used varying according to the work to be performed.

More information about rights, &c., may be obtained by letter addressed to the patentee.

It is stated that the various expeditions that have been fitted out within the last five years, for the discovery of Sir John Franklin, have cost an aggregate of £728,466. Nearly eight years have elapsed without tidings from the missing voyagers. No less than 15 expeditions in all, consisting of thirty vessels besides boats, have been engaged in the pursuit, and the effort is still continued.

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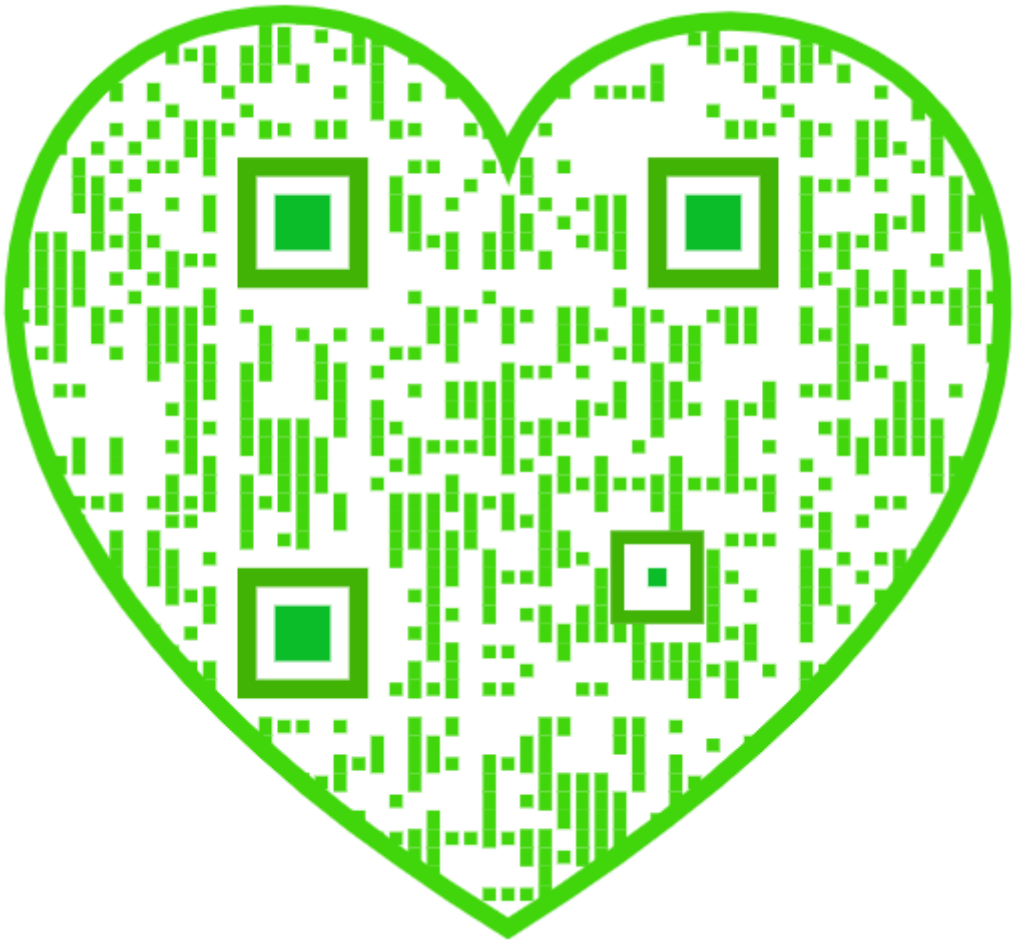

MISCELLANEOUS.

The American Engineer, Draughtsman, and Machinist.

Books on elementary engineering are not scarce, but good ones are exceedingly rare. The above is the title of a new book published by C. A Brown & Co. Phila., the editor is Oliver Byrne, Mathematician, Civil, Military, and Mechanical Engineer, the author and compiler of a long list of books, Surveyor General of the Falkland Isles, Professor of Mathematics in the College for Civil Engineers, London, etc., etc., etc. Such a distinguished and talented man of science should be able to produce a good book surely, but it appears to us that the long string of titles on the title page, is intended to astonish the ignorant natives of these United States with a profound reverence for the supreme erudition of the professor. Our practical workingmen, for whom the book is specialy designed, are too well read and instructed in both the theory and practice of their professions not to know wheat from chaff.

The author says, "no apology is offered for the mathematical proofs that set aside erroneous doctrines or establish *new facts*, however illustrious the propounder." By-and-by we will present one of these *new* facts. On page 107 he lays down the principles upon which practical mechanics are based and machines operate, which he calls "an exposition of the false mechanical doctrines promulgated by Newton, Hutton, Gregory, Robinson, and other English writers, which erroneous doctrines are yet taught in schools, colleges, and by public lecturers." In the whole of his exposition we perceive nothing new or original.

The chapter opens with an account of the dispute between Newton and his friends on one side, and Liebnitz and his friends on the other side, about the measure of mechanical force. Newton, he says, was on the wrong side, and in another place he tells us the dispute was dropped "because it was observed that the different properties expressed by $w \times v$ (Newton's formula) and $u \times v^2$ (Leibnitz's formula) *were not at variance.*" How, then, could Newton be on the wrong side.—Again, we are told "the terms *momentum* and *impetus* removed the ground work of the dispute." The dispute then, if these two terms removed its ground work, was anything but a creditable one for such famous mathematicians. The exposition, however, of the errors of Newton, Hutton, &c., would have been more creditable to the modesty of the exposer, if he had told us whence they were derived, such as pages 53 and 54, &c., Vol. 2, second series of the Glasgow practical Mechanics' Journal and Engineers' Magazine, the editor of which being one of those writers whose erroneous doctrines on mechanics Mr. Byrne exposes by using his own works (Mr. Johnstone's) for that purpose.

James Watt comes in for a slapdash attack too. Respecting the nominal horse power of an engine he says: "Such *silly* calculations are of little value although laid down by that great Scottish celt James Watt who was taught by an Irish celt, Dr. Black; the nominal horse-power of a high pressure engine has never been defined." The remark about the *nominal* horse-power of an engine never having been defined, is certainly very funny, and exhibits an extensive acquaintance with the English language. The slur about Watt is a libel on all the celts, it is as much as to say, "he could not but be a silly calculator, when taught by an Irish celt. The eminent Dr. Black was not an Irishman but a Frenchman; the author must have made a mistake in substituting a different native place from the real one of Dr. Black, as he substituted the matter of the "Practical Mechanics' Magazine" for his own.

Let us now speak of a *new fact* discovered by the author, it relates to the causes of steam boiler explosions. He says, "Mr. Oliver Byrne has discovered that the true cause of the explosion of boilers is the introduction of the medium of space." Let us quote his own words respecting the whole of this wonderful discovery. He says:—

"When the boiler is supplied with an insufficient quantity of water to compensate for that which is converted into steam the water within is lowered, and the steam takes a temperature that has not a corresponding elastic force as the moisture to supply proper density is denied. Ot this the ordinary safety-valve gives no indication, and if it be opened it produces an explosion; the steam rushes out in a conical form, *base* uppermost; this leaves a *space* in *the centre* ot the cone, through which the *medium* of *space* enters. An explosion may be produced without raising the safety valve, for a supply of water suddenly introduced will produce the same effect."

Now we think the above is something which will open the eyes and ears of our practical engineers. Here we have one of the grandest discoveries of the age presented to us, viz., the cause of steam boiler explosions. This *medium of space* we think must be a "banshee." The hint about such a cause we have read of before, in the description given by an English engineer of the introduction of the first steam engine to Hindoostan. The natives believed that an English spirit was in the boiler, and he would not work until well roasted, when off he went with a scream. The engineer taught the Hindoo fireman that if he did not provide a sufficient supply of water to the spirit in the boiler, he would break out and destroy the whole country—this spirit was no doubt the Hindoo medium of space, for as spirits can enter the key hole of a door, one can surely find no difficulty in entering a steam boiler through the *small space* in the centre of a cone of surcharged steam. The above quoted paragraph is certainly the richest, funniest, and most wonderful one we have come across in any work on engineering in the 19th century.—We have always understood that all matter was a medium of space, but it seems that there is something else which is a medium of space, consequently matter will have to be set down after this as a spiritual medium which will at once open up another field of discovery, and reveals to us the cause of the spiritual rappings, tables moving, &c.

The Hillotype again.

"Coming events cast their shadows before"—and in consequence we may shortly expect something extraordinary in the art ot Daguerreotyping, after the Report lately presented by the Senate Committee on Patents, respecting the so-called discoveries of Mr. Hill in Heliochrome. It is not our wish, nor indeed have we the slightest inclination to disparage any discovery in the field ot science—"Honor to whom honor is due" is our motto, and in accordance with it our only desire is to see that honor worthily bestowed. But in the instance just mentioned, there has been exhibited such a tortuous manner of proceeding that we are uncertain what to believe. It is now two years since the discovery of Heliochrome was first announced by Mr. Hill, which created so great a sensation that the subject was the general topic of conversation. Indeed, so confident were the public at large as to its immediate adoption that the Daguerreotypists were sensibly injured in their business, from the fact that people refused to have their portraits taken unless in the natural colors, or deferred a sitting until it was openly practiced. In a short time, however, the bubble burst, portraits began again to be taken in the ordinary manner by Daguerre's process, and nobody was a gainer but one individual, who, on the strength of his reputation as the discoverer of Heliochrome, obtained a large number of subscribers among Daguerreotype artists for a volume of receipts the value ot which was *nil*, and the cost some dollars. It followed, as a matter of course, that the Daguerreotypists generally were indignant at such conduct, and those publications that endorsed the so-called discovery were held up to contempt for their ill-judged partizanship. It would naturally be supposed that this would be the termination of any such attempts, and that the Hillotype would be buried for ever in the shades of oblivion. But quite the reverse; Mr. Hill appears never to have given up his cherished scheme of *something*, and every now and then we are surprised with intelligence not of what he does, but of what he can do. It is singular, however, that these accounts are always close after some fresh news of what has been done by others. It was thus that about six months ago Mr. Hill issued a fierce "pronunciamento" after the appearance in the public prints of M. Niepce's Memoir to the French Academy; and now, since fresh accounts of what has been done abroad in Europe and at home in America, have been published in our columns, Mr. Hill comes out with a Report of the Senate Committee on Patents, and would compel the world, *nolens volens*, to acknowledge his right to the title of discoverer of Heliochrome. To do this will require, however, something more than a Senate Report, and we must be convinced by deeds, and not by words, before we can place implicit reliance upon what has been affirmed. If Mr. Hill has really discovered what he asserts, why is he so backward in making it public? he knows that it would be for him a source of great pecuniary advantage, and that the Daguerreotypists, as a body, would grant him any terms to bring it into practical operation. Overtures to that effect have been already made by them, and yet are we to believe that Mr. Hill, with such knowledge in his possession, would be slow in seizing all the credit and advantage that would inevitably ensue? Such an idea is preposterous, and the course that he has pursued proves the contrary, for while so reluctant to publish his process, he leaves no stone unturned to obtain a favorable notice from private persons or official bodies. This last step that he has taken is however the most extravagant, and instead of fortifying his claim, renders it weaker in our estimation. Instead of taking the proper steps to substantiate his claims as an inventor in the Patent Office, he exhibits a few specimens of what he calls sun-coloring, to a committee in no ways suited, either professionally or otherwise, to give an opinion upon the subject, and imagines that, by a favorable report, his claim as the discoverer is confirmed. Such however is not the case, and the field is still as open as it ever was to competitors; at present nobody can claim to be the discoverer, nothing certain has hitherto been obtained either in Europe or America. Attempts have been made in the right direction, and some partial success has been obtained by different individuals—to obtain the colors is one thing, but to fix them, which is the point, is another, and this last desideratum has not yet been attained by any one either in France or the United States.

Manufacture of Porcelain Ware in America.

We read with no little interest an article on "American Porcelain," in the Journal of the Franklin Institute, of last January, by T. Tucker, of Philadelphia. An editorial introduction to the article states that the manufacture of plain porcelain was recently commenced in Connecticut. The letter of Mr. Tucker states that his father commenced to make porcelain in Philadelphia in 1826, and after many experiments and failures (for he was not acquainted with the art) in 1827 his efforts were crowned with success. He died in 1832, when his son (the author of the letter) and his brother, with Judge Hemphil continued the manufacture, until, from different causes, he was left in charge of the whole manufacture himself to 1837, when he gave it up and commenced ordering his goods from Europe.

When we read the article we had no idea that there was a porcelain manufactory in the United States, much less one within three miles of our office, but so it is. This beautiful ware is manufactured at Green Point, L. I., by C. Cartlidge & Co., it was commenced about four years ago by gentlemen who had been brought up to the art in England.

The first articles made were porcelain door furniture, which would seem to be made successfully, it we may judge from the variety of designs which are produced, some of them of elaborate decorations, in colors and gold, but the manufacture is now extended to other useful articles, including inkstands, curtain pins, cane handles, knocker plates, pitchers, tea ware, dinner ware, &c.

Much of the work is done by machinery, which is of great finish and ingenuity.—Touching the machinery we may claim to have some judgment. The articles thus produced are of greater regularity and of higher finish than those made in the ordinary way. Moreover, this ware is done with greater celerity, being finished in less than one-fiftieth part of the time usually occupied in other countries, not having to test in different stages of progress.

The mechanical department is under the management of Benjamin Irving, assisted by Alexander Moffatt. We have been admitted to an inspection ot this ingenious part of their business (not open to the public) which seems admirable, in contrivance and efficiency and which has excited in us both pleasure and surprise. Though it is rarely that the pioneers of an art reap a just reward, we are informed that this enterprise has been successful in its establishment.

Of the quality of their porcelain wares, it is claimed that they are equal to any other produced in the world, and after a somewhat extended examination (to which the public can be also admitted) we are not disposed to dispute the claims. We are not aware that we have seen more exquisite and finished productions from any country.

We were much gratified with the inspection of their fine models in clay, including some busts of celebrated men (Washington, Webster, Clay, Taylor, &c.) This department is under the care of Josiah Jones, an English artist of great skill and taste.

There can be no doubt but the efforts previously made to establish the manufacture of porcelain in our country failed, partly from not having discovered the best materials, and partly from the want of practical knowledge of the art.

We would remark that our inspection of these works was in a measure accidental, and we had not the remotest conception of finding about 100 persons employed in all the various branches of modelling, moulding, turning, firing, painting, &c. The manufacture of porcelain is a beautiful art, rather let us say it combines various arts requiring the finest taste, the greatest skill of hand and eye, carefulness, and a vast amount of knowledge, especially in the person who manages the business.

Mr. Irving, the machinist of the establishment, has invented a new and improved boiler, a brief description of which will be found on our invention page. This boiler we saw in operation supplying steam to the engine which drives all the machinery in these works. Although not constructed in every part according to the whole plan of Mr. Irving, its saving of fuel is surprising, as it furnishes steam with one-third the amount of fuel which was required for the boiler which it has supplanted. Upon the economical Cornish principle, the steam is generated at a high pressure and expanded before it enters the cylinder. In the old boiler, owing to bad water, encrustations were soon formed, but a continual circulation is kept through the coiled pipes in this boiler, and between the chambers, so that no scale is permitted to form in the pipes or on the plates. The amount of fuel consumed, is only about three pounds per horse power, a very small quantity.

A California Diamond.

It is stated that a diamond in the rough, as large as a pigeon's egg, has been discovered in Toulmac Co., California, which is to be exhibited in Stockton and San Francisco, and then brought to New York. A correspondent of the "San Francisco" Herald says it has been carefully and scientifically tested by Dr. F. Banks, a graduate of the Medical University of Louisiana, who pronounces, it, beyond all doubt, to be a diamond of very rare purity. It is said to be "larger than the Crown Diamond of England, which is valued at ten millions of dollars." This is rather too tough a story to believe without further evidence of its truth.

The French Railways.

The number of finished railways in France is twenty-seven—measuring in the aggregate 2,303 miles. The receipts of these roads in 1851, were $20,002,912, and the receipts in 1852 were $24,785,938. This excess ot nearly five millions of dollars in the receipts of the year 1852, over those ot 1851, is to be attributed mostly to the completion or extension, during the year that has just closed, of several of the most important lines of railways radiating from the capital to the frontiers.

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Rotary Steam Engines.

I was recently in Cincinnati for the purpose of getting a pair of my rotary engines manufactured for my own use, at Mitchelsville, to be applied to a merchant flouring mill, and also one for a gentleman of Grason County, Texas, for a saw-mill. But failing to make any satisfactory arrangements to get them made, I procured reciprocating engines for the purposes specified. Embarking in the flouring mill business (I think permanently) I shall probably abandon all further attempts to introduce my plan of rotary engine. Could they be properly made, and the facilities for their manufacture be of the best order, and well systematized, their cost would be less than that of other engines of equal power, and for many purposes I would strongly recommend them. The want of capital, to thus establish their manufacture, is an effectual barrier to my further progress in the business.

Being well satisfied that my rotary is the world's last hope, and that any material deviation from my plan, as at present matured will prove abortive, I feel a strong sympathy for those, not in possession of my experience, who are attempting to invent and mature a rotary steam engine. They will have much to learn, and their knowledge will cost them too dear. An attempt to excel, materially, the reciprocating engine, in point of economy, by substituting a rotary, is chimerical. I claim for my engine cheapness, compactness, and uniformity of action, and economy in the use of steam, equal to the reciprocating engine. Its objectionable features, in its present state of maturity, are not of any prominent character; the most obvious of which is its liability to derangement by expansion and contraction of metal, and the yielding or displacement of adjusting screws employed in maintaining the steam wheels in their proper position. To a person experienced in running one, these difficulties are of small moment.

J. A. Stewart.

Mitchellsville, Tenn., March 9, 1853.

New Route Proposed.

Capt. Synge, of the Royal Engineers, has laid a proposition before the Geographical Society of England for a new East India route by way of the St. Lawrence and the great lakes, with their extension chain including Rainy Creek, Lake of the Woods, and Winnepeg, with the rivers which fall into the latter lake on the eastern slope of the Rocky Mountains; thence the route continues westwardly to Vancouver's Sound. There are now on this route fifteen hundred miles of inland navigation, soon to be extended four hundred miles by the construction of the Saut St. Mary Canal; and the same may be extended by occasional artificial connections almost to the base of the Rocky Mountains, which are represented to be at that point but fourteen hundred and fifty eight feet above the level of the sea. The advantages claimed are, that it is three thousand miles nearer than any other mail route to Australia; the inland portion lies entirely within British territory, and instead of requiring sixty or eighty days for transit, would only require forty to fifty.

Missouri Railway Law.

The law authorizes any number of persons, not less than six, to construct a railroad in that State.

It fixes the gauge, or width between the rails, of all the railroads, at 5 feet 6 inches.

It exempts all existing railways from the jurisdiction of Justices of the Peace, from and after the 24th of February.

It authorizes any County Court or City Council in the State, to subscribe to any railway, and to pay their installments by an issue of bonds, or by special taxation. And they may put in their swamp and overflowed lands, internal improvements and other funds.

Any county or city levying a railway tax, are to issue receipts to the tax payers, which are assignable, and convertible into stock of the company to which subscription is made.

The law contains many other provisions important to Missouri railway enterprizes.

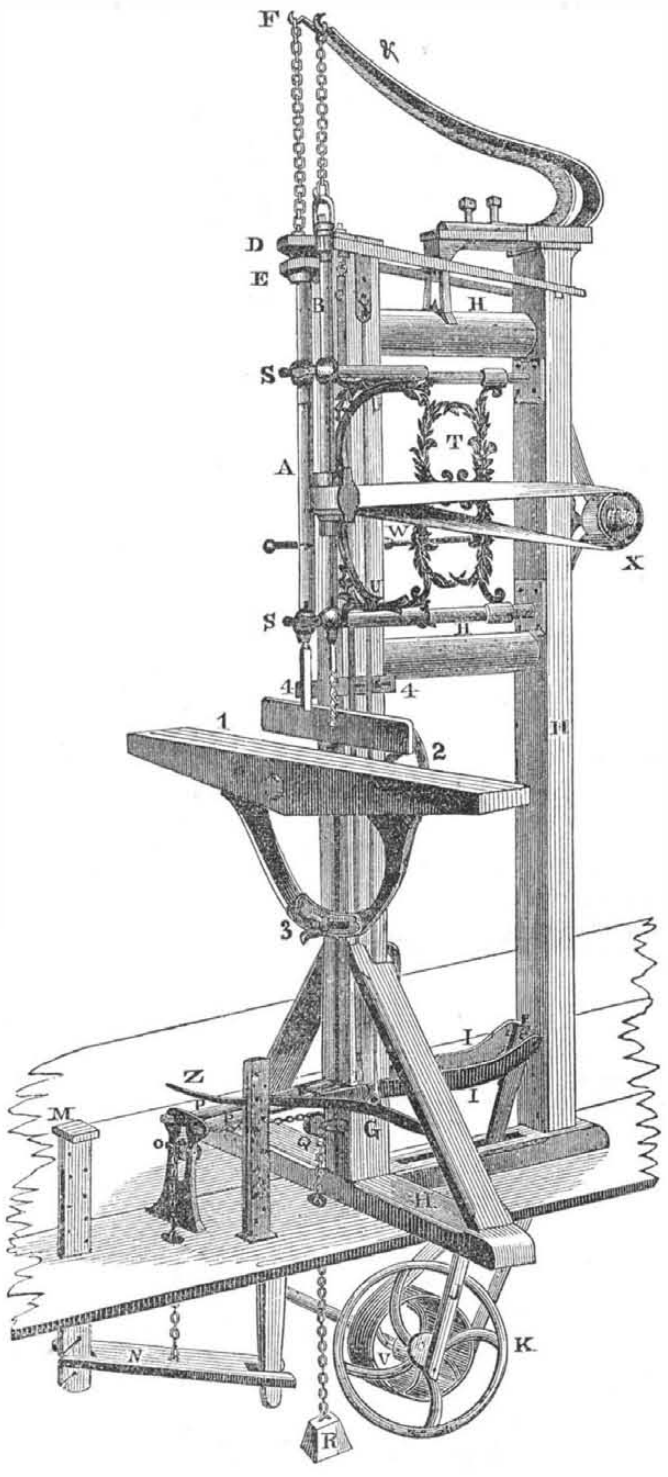
Agricultural Machinery.

As an instance of the improvement in agriculture now in progress, it may be mentioned that the makers of steam engines for agricultural purposes in Engiand, have in some cases increased eight-fold within the last three years. One house made in 1848 only 15 engines, but in 1851 finished no less than 294. The same results hold good with respect to other improved agricultural implements.—One maker turns out 5 threshing machines a week; another who made only 56 machines in 1849 and 1850, turned out 192 in the last 21 months.

A meeting of the St. Andrews and Quebec Railway Co. was held at London on the 24th ult. The Directors' Report was regarded as satisfactory and adopted.

A joint stock company has been formed to work the Middletown, Conn., silver mines. Its capital is $60,000. The mines are said to be very rich.

OTIS' MORTISING, BORING, AND HUB-MORTISING MACHINE.



The above is a perspective view of Otis' Mortising and Boring Machine in combination. A represents the mortising or chisel shaft, B, the boring or auger shaft.

The mortising is connected with the power, and operated by it in the following manner:

The side rods, C, one of which is seen in the engraving is connected with the long yoke, D, at the top of the chisel rod, by an adjustable joint, with jam nuts to hold all fast together and keep the side rods of equal length. The two yokes, D and E, are connected together by short eye bolts, which give the yokes full play, yet causing the chisel rod, yokes, &c., to move together in forcing the chisel down into the wood, and to retract the same by the help of the steel spring, F, there is a provision likewise for diminishing the friction between them.

The rods, C, are connected at the lower end to a short slide, G, which plays in a groove in the bottom of the frame work, H H H H H, by a screw. The slide, G, has a steel pin in it which plays in a groove in the movable levers, I I, that are connected by the pitman, J, to the balance wheel, K, the balance wheel causing the levers to make a full stroke at every revolution, but not operating on the chisel rod because the centre of the pin in the sliding fulcrum, L, is cut away, thus causing the centres of motion to be directly over each other, and of course giving no motion to the chisel rod. To bring the chisel rod into play the foot is pressed down on the treadle, M, which carries down the lever, N, and the chain that is connected to it that passes over the little chain pulley, O, to the sliding fulcrum, L, thus causing the sliding fulcrum with the movable lever, I I, to slide forward on the rods, P P, over the steel pin in the slide, G, and of course carrying down pin and slide rods and chisel rod with it, and allowing the chisel to return again to the same level at every stroke; mortising, of course, deeper and deeper as the levers slide or the resistance is moved further from the fulcrum and nearer the power. The sliding fulcrum is brought back to its former position by the chain passing from the sliding fulcrum over the chain pulley, Q, to the dead weight R, when the pressure of the foot is removed, thus bringing it into full stroke, or five inches, or stopping the chisel at the option of the operator. The chisel rod passes through the guide bolts, S S, the balls of which are lined with babbitt metal. Said guide bolts are connected together by the ornamental brace, T, to which the boring brace, U, is attached, thus causing all the upper work to move in or out together, for any thickness of stuff, and also keeping the back and front boring shafts the same relative distance from each other.

By this arrangement the chisel and auger are always in range, so that the chisel follows the auger, which in mortising hard wood is very desirable. They are held in any desired position by thumb screws not seen in the engraving.

The boring shaft is operated by a belt coming up from a pulley, T, through friction pulleys, to the short shaft at the back of the machine, on the end of which is a pulley not seen in the engraving. This short shaft hangs in a brace attached to the ends of the guide bolts, and moving in and out with them.—This pulley is made a tight or a loose pulley by a clutch, the shifter of which is seen, at W, thus causing the pulley at X, with its belt running to the boring shaft to revolve at pleasure. The boring shaft is brought down by the rod, Y, and the treadle, Z, and retracted by the spring, &, and operates with a speed and precision unknown in any other kind of boring machines. The bed, 1, in which the stuff is bored or mortised, is adjustable, being raised or lowered at pleasure for any width of stuff, by the hand wheel and bolt at 2, or made to work on any bevel required by the bevel sweep and nut at 3. The stuff is held back against a guard, and held down by regulating screws at 4 4.

A graduated scale of prices is charged according to what sort of machine is required, for the boring and mortising apparatus can be had separately, as well as with or without the hub rigging, and also adapted for hand work or horse power.

Full particulars of which can be had on application to Otis & Cottle, Syracuse, N. Y.

Treatment of Scarlet Fever.

Dr. Hereford, of Washington, in a communication which appears in the "Alexandria Gazette," thinks that too much physic has been an error in the management of scarlatina. He says, during thirty years' practice, he has found that the less active medicine he used, the greater was his success in the treatment of this disease. He disclaims any motives of vanity or self-interest in his statement. His treatment is described as follows:

"In conclusion I will say, my treatment of scarlet fever is very simple. Open the bowels regularly every day with some mild aperient medicine, such as castor oil, senna, &c., and keep the patient at rest and comfortably warm; sponge the surface with tepid water two or three times a day; while it is hotter than natural admit fresh air; live on a bland diet, such as a cupfull of arrowroot, several times a day; toast water for common drink. Gargles made of strong sage tea, honey, and alum, or borax, may be used from the commencement, if the throat is affected."

Cure for the Bee Moth Ravages.

The "Mobile Tribune" says:—"Such of our readers as are engaged in the bee culture will be glad to learn that a remedy has been discovered which effectually prevents the ravages of the bee moth. The frequent and serious injury caused by this pestiferous insect, has deterred many persons from entering into the business of raising bees, more especially as in some localities the ravages have been so great as nearly to destroy both bees and honey. The plan is this:—split joints of cane through the centre and arrange them on the four sides of the hive, with the split side resting on the platform. The moth, instead of depositing its eggs under the edge of the hive, will lay them under the split cane. From these depositories they may be removed and destroyed as often as necessary with little trouble. A friend informs us that he knows the plan has been tried and found entirely successful."

Georgia is a model State. She has 860 miles of railroad in operation. Her credit is of the highest order, her six per cent. bonds selling at the highest premium, and she now gives notice of her readiness to pay the interest on her bonds for the next six months in advance.

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NEW INVENTIONS.

Improved Steam Boiler.

Measures to secure a patent for the above have been taken by Benjamin Irving, of Greenpoint, L. I. This form of boiler has great merits in the essential point—of considerable heating surface in a small compass, whilst a small quantity of water suffices to cover the heated plate, and in consequence steam is rapidly generated. But although quick in operation it is emphatically a safe boiler, as the system of circulation, which is one of its leading traits enables a very small quantity of water to keep the flue plates from injury. It is, however, almost impossible for the water level to be reduced by accident to such a degree as to be dangerous, and moreover the form is so strong that braces or stays are not required. The outer shell consists of a vertical cylinder containing a smaller one nearly as high, the annular space thus formed is closed at each end by a plate, whilst a series of flue tubes are arranged inside the annular space. Each cylinder terminates at the top in a dome, that of the outer cylinder touching the inner dome (which is the steam chamber) near the vertex. A smaller cylinder is situated inside the two just described, and it is united to the inner one some distance from the top, but the lower end does not reach to the bottom; this contains a fourth cylinder united to it at the bottom, and ending in a dome at the top. The fire grate is circular and lies below the two latter cylinders. Two coils of pipe are placed within the smallest cylinder, and communicate with the lowest part of the two outer cylinders, their upper ends passing through the dome to the steam chamber. That space between the outer shell and contained cylinder, which is not engrossed by the flue tubes, is used as a "water jacket," and a similar water space exists between the two inner cylinders, these water spaces being connected. A coil of pipe, led through the above spaces, will serve either to dry or to generate the steam. The gases, as they rise from the fuel, proceed up the innermost cylinder, thence between the two others, whilst the products of combustion descend and from a circular passage escape through the flue tubes into a space that conducts to the chimney.

New Reaping Machines.

Frederick Nishwitz, of Williamsburgh, N. Y., has taken measures to secure a patent for improvements in Reapers or Harvesting Machines. These improvements consist in a peculiar construction and arrangement of the cutters and in the manner by which the grain is laid in proper order upon the ground after being cut. The cutters are placed in pairs in a spiral curve round a shaft, being set at right angles to it, and are carried round as the shaft rotates, cutting the grain in their revolution. Directly behind the shaft is the front board of the machine, on the upper part of which are affixed a series of pointed fingers, which are slotted to receive the cutters as the shaft revolves, and are set at such an angle that the grass or grain is bent in a suitable direction for the cutters to operate with the greatest ease and certainty. The grass or grain on being cut falls against a number of belts provided with spikes, for the purpose of retaining it, and which pass around pulleys having a flange on each side. As they are carried along the grass or grain is thrown from the spikes and falls upon curved guides, by which the butt of the straw or grass is placed towards the machine as it falls upon the ground.

Sawing Machine.

Measures to secure a patent for an improved construction of the above, by which it is rendered more suitable for certain kinds of work have been taken by Thomas J. Alexander, of Westerville, Ohio. The advantage of this plan is that logs can be sawn directly into broom handles, chair rounds, &c., without having been previously sawn into planks, thus economising an important item of expense. One horizontal and two vertical saws adjusted in relative positions, serve to cut the sticks from the logs, the vertical saws being placed underneath the horizontal saw and nearly touching it. The log is secured between screw rods passing through the cross-piece of a reciprocating frame, and which are raised or depressed by turning a crank so that the log can be adjusted with facility.

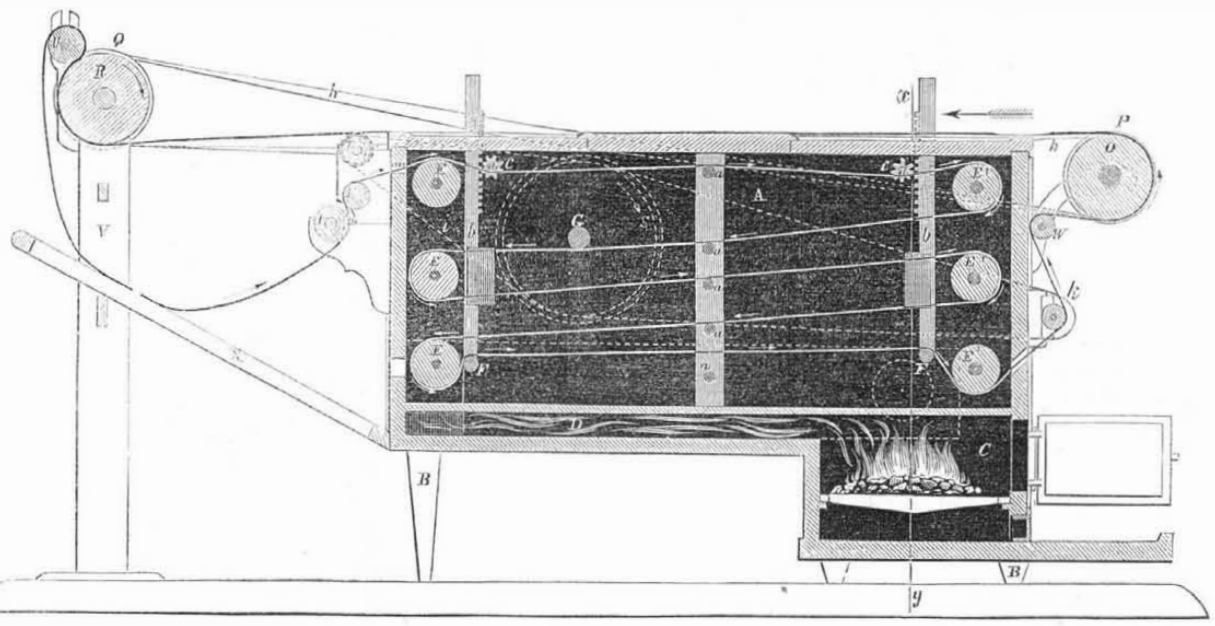
Portable Gas Light.

An improved apparatus of the above description has been invented by John Power, of Brooklyn, N. Y., who has taken measures to secure a patent. The improvement consists in the use of an elastic coupling for joining a flexible tube of any material that conducts the gas from the ordinary burner to a portable article of the same kind. The coupling is compressed tightly between two metallic discs, and has a hole in its centre to allow of the insertion of differently sized burners, which are held firmly in their place by the above-mentioned means.

Catawba Grapes.

The "Boston Transcript" has received some Catawba grapes in an excellent state of preservation that were kept by being laid on a table, in a cool airy place, and covering them with cotton batting. This is a simple and easy process and worth remembering by cultivators of this excellent variety of the grape the coming season.

IMPROVED MACHINE FOR DRYING CLOTH.---Fig. 1.



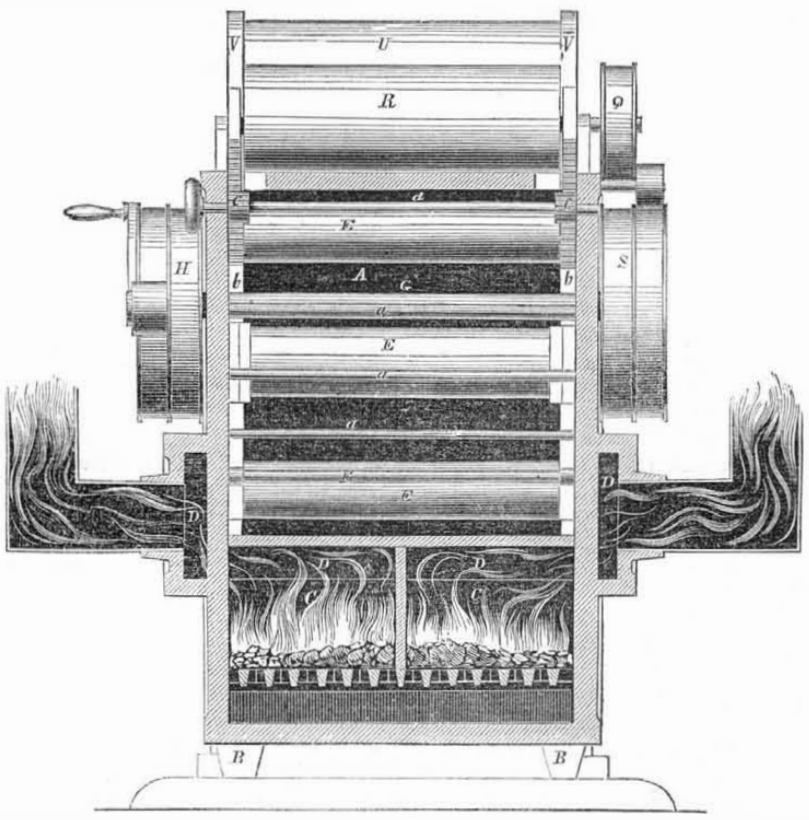
The annexed engravings are views of improved machinery for drying cloth, invented by Robert Preston, of North Pownal, Bennington Co., Vt., who has taken measures to secure a patent.

Fig. 1 is a longitudinal vertical section of the machine, and fig. 2 is a transverse vertical section, taken in the plane indicated by the line $x\,y$, fig. 1. The same letters refer to like parts.

At different stages in the manufacture of woolen cloth, the piece requires to be dried, which is done by stretching it on tenter frames, which are placed in the open air. Drying cloth in this manner is a tedious process, the object of this invention is to dry the cloth much faster. The cloth by this machine is dried within the factory, and saves much time and labor, and the nap, after drying, is left smooth.

A is a large box or chamber, which has large openings on the top, and openings, m n, at the ends, which are long enough and deep enough to admit the cloth to be dried. It may be of plate or cast-iron, or other material, and is supported by standards, B B. Under the front part of chamber A, there are furnaces, C C, from which flues, D, extend to the back end, and then return along the sides to enter any suitable chimney; E and E′ are two series of rollers in the box, and extend across it. There is another series of small rollers, a a, and two others, F F, whose journals are fitted in slides, b, which are capable of being adjusted by racks, and pinions, c, the spindles, d, of the pinions, being turned from the outside. G is a shaft, which works in suitable bearings in the sides of the chamber through which it passes. It carries a belt pulley, H, which gives motion by a belt

Figure 2.



to a nap-laying card cylinder, I, also to a small pulley on the side, which, by a belt, moves three pulleys, but which are not shown in the figures. O is a large roller, in front of chamber A outside; it has a pulley, P, on one of its ends, which, by a belt, h, gives motion to pulley, Q, on the shaft of roller, R, secured in standards, V. On the shaft, G, is a double pulley, S, which gives motion by a belt, i, to a brush cylinder, T, and by another belt to a smothing roller, k. U is a roller, whose journals work in guides in the upper part of standards, V, and which is allowed to slide by its own weight down upon roller R. W is a roller below roller O, and Y is another small roller hung in bearings at the back of the chamber; X is an inclined platform extending upwards from the lower part of the back of the chamber, and supported at its back or upper end by standards, V.

Operation—Fire is made in the furnaces to heat the chamber. The piece of cloth is passed between the rollers, R and U, then over the latter roller, from whence it is carried partly round the nap-laying card, then over roller Y, and through the opening, m, into the chamber, A, through which it passes several times back and forth round the rollers, E and E′, and then passes out at n. While in the chamber the several layers are kept apart by the rollers, r, and the bottom layer is raised to a proper distance from the bottom of the chamber to prevent injury by too intense heat, but at the same time to get the full benefit of the heat by rollers, F, which are adjusted by the pinions, c, and racks. After leaving the chamber, the cloth is conducted over the outside of the smoothing roller, k, by which it is spread evenly, and then it is conducted over the roller, W, and round the roller, O, from whence it passes over the top of the chamber, A, and over brush T. It has now made the circuit of all the rollers, and the ends may be loosely stitched together. The revolution of the several rollers, as described, will cause the cloth to move continuously through the chamber, in the direction of the arrows, fig. 1, as long as may be required. When the piece is of greater length than the circuit of the rollers, the slack part falls on the inclined platform, X. The cloth, while passing through the drying chamber is kept at a proper tension, and always kept straight; the nap is properly laid by card, I, before it enters the chamber, and it is smoothed after leaving by the brush, T, the said card and brush revolving at a greater speed than that at which the cloth moves. The end of the piece is secured to belts running with the roller, which allow the end to be carried through the chamber without falling upon the flue.

This drying machine has been in operation for four months in the mills of R. Carpenter, Jr., & Co., North Pownal, Vt., who state to us, in a letter, that it dries from 12 to 1500 yards of satinet cloth per day, and does its work well.

More information may be obtained by letter addressed to the inventor.

The New York and Erie Railroad.

Benjamin Loder, Esq., President of the above railroad, has written a letter in answer to the charges of the "American Railroad Journal." His letter respecting the charges made against the management of that road, is perfectly satisfactory in our opinion. It appears to us that this railroad could not have been better managed.

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Scientific American

NEW-YORK, APRIL 2, 1853.

The Credulous and Incredulous Respecting Inventions.

When any of your feather literati writes about the opposition which had been made to certain inventions (when they were first brought out) which have become famous, and of such great value to the world, they are sure to mark the opponents of them as having been men of scientific reputation, such as Dr. Lardner and his alleged opposition to Atlantic navigation. Now it is not true that men of real scientific reputation have in general been the opponents of new inventions, but the very reverse. The most incredulous and yet most credulous of men respecting new discoveries and inventions, are your light literati, your would-be great men in all things. These are the men who are always at the ear of the public, and who both ridicule and extol useful, and worthless new projects, without either rule or reason. And it always happens when an invention or a discovery which they had denounced turns out in spite of all opposition to be a grand and useful improvement, they are sure to turn round, spangle it with praise and bear false witness against scientific men. When corrected for making erroneous statements they have not the honesty to publish the truth, consequently their falsehoods go on among community like rolling snow-balls, increasing in the magnitude of their evil according to the space over which they travel. When any new project which they had lauded to the skies, turns out to be a worthless, useless, piece of trash, or has been proven to be a deception, they are the very men who happened to see through it all from the very first—they were the true prophets, and some scientific men were the deceivers or deceived. When they make false statements about inventions and inventors, thereby doing great injury sometimes to the fame of honest men, they have not candor enough to correct themselves for fear the public would be led to doubt their sagacity and veracity. Those who examine beneath the surface of society, know how to estimate such characters, they look upon them as the moths of literature.

With respect to a new invention—its usefulness and practicability, or not—an opposing candid opinion with reasons annexed, should always be esteemed of more value than indiscriminate praise. At the present day, when men of all characters rush out with alleged new discoveries and inventions, universal laudation of everything is the greatest evil that can be inflicted on community. Candid opposition and prudent praise, respecting what is apparently bad, and what is reasonably good, are the qualities which we like to see displayed in any man, and these qualities of character are always exhibited by those who are competent judges of new inventions and discoveries—those who have devoted their time and attention to such matters.—Why? because their reputation in respect to the opinions they advance on such subjects is at stake; they, of necessity have to be honest, cautious, and discriminating; if not, sooner or later, they will be the losers. In these days of false lights and false pressures, the public should be exceedingly cautious of those who express opinions about new inventions and discoveries lest they be deceived by credulity in bad projects, and incredulity in good ones.

The Power of Heat and Cold.

It has often surprised us to see what an amount of clap-trap and deception there is in a name. For a great number of years heat had been employed in combination with water to form—a useful agent—steam, which for a long time had driven our engines, looms, steamships, and locomotives, and has done good service, but then it was nothing but *steam*, a plain old fashioned name. Well all at once there has arisen a great rival in fame to it, which has been called *caloric* (in common language *heat*) which no sooner has made its appearance under such a cognomen, than straightway the whole race of light literati—the lovers of long names, fall down and worship it, and not only speak lightly of the services of such a faithful old servant as steam, but deny their value. We were amused in reading in one of our daily papers last week, a slap-dash article on steam and caloric in which the editor writes the epitaph of the former and the prologue to the reign of the latter. The caloric of the said paper was nothing more nor less than hot air—heat and air combined, and no more caloric in reality than steam is.

The power of steam is developed by a chemical action, viz., simple combustion, hence we cannot obtain power from a steam engine without burning fuel. It is this application of chemical force to move machinery, which has changed the whole face of society, in respect to commerce, travel and mannufacture during the last century. It is this action which now unites far distant lands by a few days' ocean journey. The quantity of coal consumed to move a machine may then be considered the exponent of power to propel machinery. The power of a certain quantity of coal must be definite—it cannot have the property of developing infinite force, because the heat which is developed by the combustion of a certain quantity of coal is definite. By no plan but the hocus-pocus of humbug (excuse the term, we would not use it only it is the best for the purpose) can it produce but a certain quantity of motion—mechanical power. There are men, however, who pretend to know something about science and logic—but they never surely studied philosophy nor consulted reason—who have asserted that a certain quantity of heat once developed by the combustion of a certain amount of coal, will produce an infinite quantity of motion. They say, "heat produces motion, and when a certain quantity of it is developed in steam and then condensed, it is *annihilated* and lost, but the heat of hot air is given out, taken up by wire gauze, given out again, and so on, never lost, but going on producing an infinite amount of force.' Their principle of logic may be thus defined mathematically. $a \times b = c - b = a \times b = 2c - b = a \times b = 3c$, &c., a is a certain amount of heat, b is a certain amount of air, and c the stroke of an engine. The above is absurd, and points out clearly the reasoning of the hot air philosophers, who assert that a definite amount of heat can produce an infinite amount of motion—any number of strokes of an engine by multiplying and subtracting the same quantities of heat and air to and from one another alternately.

Heat produces great changes; it causes bodies to move with great rapidity, but cold is as much the source of such a power as heat, it produces as great changes. If the earth, sea, and air, and the whole universe were of one temperature there would be no motion.—It is the exhaustion of the hot steam and hot air into a colder medium, which makes their respective engines move; they could not exhaust into mediums of the same temperature. How absurd then, to talk of heat being the cause of all motion in machinery. It requires both heat and cold to produce motion (by chemical forces) in machinery. Heat heaves up rocks from the depths of burning craters; cold splits rocks to pieces, and bursts hollow balls of iron into fragments. The currents of the ocean, and the whirlwinds in their wrath are not produced by heat alone, but heat and cold, they are the effects of combined causes.

These principles of mechanical philosophy as set forth, we hold to be incontrovertible; there is a philosophy falsely so called which has recently been propagated in this and other cities, and which we have endeavored to controvert, because we believe that the promulgation of any error in science and art hinders the progress of truth and retards the march of discovery.

Commissioner of Patents.

The Hon. Charles Mason, of Iowa, a brother of Senator Mason, of Virginia, has been appointed and confirmed Commissioner of Patents.

Mr. Mason is understood to possess high legal qualifications, and it is confidently expected that his administration of the affairs of the Office will prove highly satisfactory to the whole country. It gives us much pleasure to bear testimony to the ability and courtesy of Mr. Hodges, the late incumbent. His appointment was most judicious and highly complimentary to Mr. Fillmore's judgment. We predict for Mr. Mason, also, a popular career.

The Crystal Palace.

The attention of our readers is particularly directed to the following correspondence between Messrs. Wood, Light, & Co., manufacturers of machinery, Worcester, Mass., and the managers of the Crystal Palace:

"WORCESTER, 21st March, 1853.

To the Association for the Exhibition of the Industry of all Nations, No. 53 Broadway, New York City:

GENTLEMEN.—We observe this morning an article in the "Scientific American," headed "The Crystal Palace," the perusal of which has led us to the following conclusions, viz., that if the article referred to be true, we do not consider ourselves bound to forward for exhibition the machine we intended for that purpose, it being so entirely different from what was represented to us by your agent when he visited our works. We remain most respectfully yours very truly,

WOOD, LIGHT, & Co.

[ANSWER]

Association for the Exhibition of the Industry of all Nations, Office No. 53 Broadway, New York, 22 March, 1853:

MESSRS. WOOD, LIGHT, & Co., Worcester, GENTLEMEN.—In answer to your letter of yesterday, I enclose you your application for space, which is considered as withdrawn.—The Committee was disposed to consider it as favorable as possible but in view of the very hasty conclusion at which you have arrived, they have no reluctance in assigning the space relinquished by you to some other of the many worthy applicants who would otherwise have been excluded. I have the honor to be your very obedient servant,

WM. WHETTEN, Sec.

P. S.—Mr. Joseph E. Holmes, who called upon you, desires to express his surprise that you should have paid so much attention to a publication not only not authorized by the association but in manifest hostility to it, and growing out of a sentiment of personal resentment, the source of which was made public some months since."

[The above correspondence between Messrs. Wood, Light, & Co., and the Crystal Palace Association resulted, as most of our readers will understand, from an article which appeared in number 27, headed "The Crystal Palace," wherein we commented upon the injustice of compelling exhibitors to pay for admission, which we learned it was their intention to do.

The letter of the Association if construed strictly in accordance with the language held forth, fully confirms the impression expressed in our article, because the firm did *not wish* to be considered as bound to forward a machine providing they were to be charged for admission to the Palace, and without hesitancy their application for space is returned to them, thus virtually acknowledging that the charge would be made.

If, however, such is not their intention, then we say that the treatment of Messrs. Wood, Light, & Co., is beneath the dignity which ought to characterize the management of so important an enterprize, and must draw forth the condemnation of all high-minded men; why had not these gentlemen a right to enquire into a matter in which they were interested, and why should they not have been treated with common civility? The public must and will doubt the motive which prompts an association to acts so small and contemptible.

The motives attributed to us in the postscript are simply false and ridiculous, and would not elicit any remarks did we not wish to still further illustrate the spirit which pervades the management. We have repeatedly asserted that we hoped the exhibition would prove successful; we have no other wish at heart and never had after it was fully settled that it was to take place.

We intended from the first and still intend to keep an eye upon the manner in which it is to be conducted, and we are bound as independent journalists to express our disapprobation of all attempts to disregard the rights and interests of contributors, who alone are able to render it an affair creditable to the nation. Our position is, and we hope always will be above the influence of place and power, and we intend that the public shall not suffer by our applause of objects doubtful in their character.

The Association did "not authorize" the publication of our remarks; well really this is quite cool, we are happy to inform the public that the Scientific American is not the official organ of the company, we are the organ for the people—the exhibitors—in whose welfare we feel much interest.

Events of the Week.

VALUATION OF INDIGO.—As a great deal of indigo is used for dyeing in our country, and as the imported kinds (Bengal and Guatemala) are very high in price, a method of estimating the comparative value of different samples, must be very acceptable. The following is a method for estimating the same proposed by Dr. Penny, the eminent chemist in Glasgow:—

Ten grains of the sample very finely powdered are carefully rubbed with 2 measured drachms of fuming sulphuric acid, and the mixture allowed to digest 12 to 14 hours with occasional stirring, the air being excluded.—A small flat bottomed flask, with a tight cork answers best for this operation. Some fragments of broken glass should be added to prevent the indigo from clotting.

The temperature should be from 70° to 80° Fah., if it rises higher sulphurous acid may be generated and the whole operation rendered worthless. When the indigo is perfectly dissolved the solution is gradually poured (constantly stirring) into a basin containing a pint of water; by measure ¾ of an ounce of hydrochloric acid is instantly added. An alcimetre of 100 equal parts is made up with 7½ grains of pure dry bichromate of potassa dissolved in it, and this is gradually added to the indigo in the basin, until a drop of the mixture, let fall upon a slip of filter paper presents a light brown or ochre shade, without any mixture of blue or green. The number of measures of bichromate solution used, is then read off, and this shows the comparative value of the sample. In applying the test drop to the paper, the best results are obtained by bringing the end of a glass rod in contact with the indigo solution, and then gently pressing it against the surface of the paper. It is advisable to keep the indigo solution gently warmed while the bichromate is being added, and the mixture should be well stirred after each addition. Towards the conclusion the bichromate should be added very slowly and carefully, as one or two drops then produce a great effect. The changes of color in the mixture clearly indicate the advance of the operation. The original blue color of the sulphate of Indigo becomes lighter and lighter, then acquires a greenish shade, then greenish brown, and almost immediately after an ochre brown. Ten grains of pure indigo require nearly 7½ grains of bichromate of potash. For dyers and color-makers in print works, the above mode of testing good indigo (we have not tried it) by Dr. Penny, if correct, is invaluable, at the same time we can say, that long experience enables a good practical chemist to judge very closely of the quality of indigo by the eye.

Patent Law Case---Sewing Machine.

In the U. S. Circuit Court, Boston, Monday March 21st, in a suit at equity, plaintiff, Elias Howe, Jr., defendants, John Woolredge et al., the court granted a preliminary injunction against the use, sale, and manufacture of "Singer's Sewing Machines," and the defendants were required to give bonds to account for the use of the machines in case of a verdict for the plaintiff in the future trial at law.

Galls on Horses.

In France it is the practice when horses get their hair rubbed off, or the skin scarified, to apply a blister to the part at once. This, if applied as soon as the injury is done, will it is said, restore the growth of hair; it has never been known to fail when applied in time.

[The above is from the "Spirit of the Times." We have been informed that a poultice of honey and ley made from woodashes is the best substance for restoring the hair; it looks more rational than applying a blister.

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Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MARCH 22, 1853.

HYDRAULIC STEAM PUMPS—By H. N. Black, of Philadelphia, Pa.: I do not claim a double cylinder pump or water engine, nor opening a valve at the end of the stroke of a steam piston, and injecting water into a steam cylinder, for producing a partial vacuum; but I claim the combination of the double slotted water and steam cylinder, double pistons, and slotted piston rod, arranged and operating in the manner set forth.

SEPARATING PAPER BY SINGLE SHEETS—By J. P Comly, of Dayton, Ohio: I claim, first, a table or range of tubes, connecting with an exhaust pump or vacuum, for separating the edge of a sheet from a heap of paper, by atmospheric pressure, in combination with a roller, or its equivalent, traversing to and fro on the upper sheet, for the several purposes of lowering and admitting air between the leaves, presenting the edge of the top sheet to the tubes, and, on its backward stroke, serving to straighten the pile.

Second, the tube or tubes aforesaid, in combination with the vibrating supporting bar, for upholding the forward edge of the sheet when dropped by the tubes, presenting it properly to the fingers, and supporting it from the heap, while being drawn away.

TANNING—Roswell Enos & Bela T. Hunt, of St. Charles, Ill.: We claim the process of tanning with the use of lime, salt, bran, sumac, and cutch, or any other tanning in room of cutch, substantially in the manner described, whereby we commence tanning, at the same time that we commence reducing, as the salt and bran overpowers the lime, the tan takes the place of the lime, and converts the hide into more perfect leather, and in less time than can be made in any other way.

Hides are not liable to get damaged by our process, as we do not use an article that is injurious to leather

It is not on the materials used that we claim letters patent, but on the manner of applying them to the hide, as set forth.

CHEESE PRESSES—By Mills A. Hackley, of Belleville, N. Y.: I claim the turning table or its equivalent, in combination with the roller in such manner, that whenever the table is adjusted for turning the cheese, there will be a corresponding adjustment of the roller for facilitating the process of turning the same.

KNITTING MACHINES—By Wm. Mansfield, of Dracut, Mass: I claim forming the loops, in knitting ribbed fabrics, by the combination of two sets of needles, made to operate together, as set forth, the same enabling me to give important advantages in the construction and operation of the loom.

DISTILLING ROSIN OIL—By James Riley & Wm. Allen, of Southfield, N. Y.: We claim the process by which we manufacture oil from rosin, by passing it from an alembic, through expanding worms, or their equivalents, surrounded by a jacket of fire-brick or clay, whereby we prevent destructive distillation, carbonization, and greatly economize time, as set forth.

HARNESS—By James Stanbrough, of Newark, N. Y.: I claim the forming of rounds, raises, or rolls, on the different parts of a harness or other leather work, by doubling and stitching together a strap of leather, at its edges, and then binding these edges by a separate piece, and connecting the stitching of such binding, by drawing up and fastening by the side thereof, folds of the strap; and this I claim, whether the single strap only be used for forming a single roll, or a secondary strap be used for forming two or more rolls, as described.

PEGGING BOOTS AND SHOES—By Seth D. Tripp, of Rochester, Mass. (assignor to E. L. Norfolk, of Salem, Mass.:) I claim the combination of each frame, with its supporting shaft, by means of a rocker frame, the same being for the purpose of allowing a free vertical, as well as other movements, as described, by either of the frames, so that it may be guided, in its vertical movement, by the curvature of the upper surface of the sole of the boot or shoe, and horizontally by the cam wheel, substantially as specified.

Also the manner of combining the awl and driver with one carrier, made to operate as described, whereby they are alternately presented or brought down against or towards the sole, by the revolution of the carrier, as specified.

Also the combination of the guide with the knife or chisel, and so as to operate therewith, in the manner and for the purpose of guiding said chisel properly against the peg wood, as described.

Also the improvement in the construction of the charger, viz, the making of the same, with two or more separate compartments for holding the strips of peg wood, which compartments are to be successively brought forwards under the operation of the piston slide, as the several pieces or strips of peg wood are successively cut up into pegs, meaning to claim a combination of a series of compartments, in the one single piston slide, made to operate as set forth.

Also the combination of mechanism by which the charger is moved, the same consisting in the operating spring, rack, click or pawl, and spring, applied to the upright part of the pawl, the whole to act in conjunction with the piston slide, as described.

Also the combination of mechanism for operating the slide, the same consisting of the rack or ratchet thereof, impelling pawl, spring lever, cam, ratchet wheel, and spring hook pawl, as applied to the frame and the bar, and made to operate substantially as set forth, the same causing peg wood to be shoved through the charger, and keeping the pegs in advance of the peg wood, and successively forcing them into the correct position over the hole made in the sole by the awl.

And, in cambination with the pressure spring, I claim the lever, with its bent projection, spring, bent lever, and cam, the same being for the purpose as set forth.

The public debt of the United States due 1st July, 1853, and which the Secretary advertises will be paid on presentation, amounts to within a fraction of six millions of dollars.

Artesian Well.

An artesian well of great depth is being bored at present at St. Louis, for a sugar refinery in that city. It was begun in 1849, and has been worked 1,590 feet, nearly half the depth of the celebrated artesian well in Westphalia, Germany, which is sunk 2,385. The object is to obtain a supply of other than limestone water which is the only sort that can be found by the ordinary channels in that vicinity. At the present depth of 1,590 feet a pretty copious stream of sulphur water flows from the well, having precisely the taste of the Blue Lick water in Kentucky, although perhaps it is not quite so thoroughly impregnated with sulphur. It is, however, concluded from recent indications, that a supply of pure sweet water will be now obtained. The following is a list of the different strata bored through in the course of operations.

1st. Through limestone, 28 feet; 2nd, shale 2; 3rd, limestone, 231; 4th, chertz rock, 15; 5th, limestone, 74; 6th, shale, 30; 7th, limestone, 75; 8th, shale, 1½; 9th, limestone, 38½; 10th, sandy shale, 7½; 11th, limestone, 128½; 12th, red marl, 15; 13th, shale, 30; 14th, red marl, 50; 15th, shale, 30; 16th, limestone, 119; 17th, shale, 66; 18th, bituminous marl, 15; 19th, shale, 80; 20th, limestone, 134; 21st, chertz rock, 62; 22nd, limestone, 134; 23rd, shale, 70; 24th, limestone, 20; 25th, shale, 56; 26th, limestone, 34; 27th white soft sandstone, 15 feet.

The well was first commenced as a cistern. From the surface of the ground, where it is fourteen feet in diameter, it has a conical form, lessening at the depth of thirty feet to a diameter of six feet. Thence the diameter is again lessened to sixteen inches, until the depth of 78 feet from the surface is attained. From that point it is diminished to nine inches, and this diameter is preserved to the depth of 457 feet. Passing this line the diameter to the present bottom of the well, is three and a half inches.

The lowest summer stand of the Mississippi river is passed in the first stratum of the shale, at the depth of twenty-nine or thirty feet from the surface. The water in the well however, is always higher than the water line of the river, and is not affected by the variations of the latter. The first appearance of gas was found at a depth of 566 feet, in a strata of shale one and a half feet thick, which was strongly imbued with carbonated hydrogen. When about 250 feet below the surface of the earth at the beginning of a layer of limestone, the water in the well became salty.

The level of the sea—reckoned to be five hundred and thirty-two feet below the city of St. Louis—was passed in the same layer—two hundred feet lower still, in a bed of shale, the water contained one-and-a-half per cent. of salt. At a depth of 950 feet, a bed of bituminous marl 15 feet in diameter was struck. The marl nearly resembled coal, and on being subjected to a great heat, without actually burning, lost much of its weight. In the stratum of shale which followed, the salt in the water increased to two-and-a-half per cent. The hard streak passed was a bed of chertz, struck at a depth of 1,179 feet from the surface, and going down 62 feet. In this layer the salt in the water increased to full three per cent. The boring at present is, as appears by the statement above, in a bed of white soft sand rock, the most promising that has yet been struck for a supply of water, such as is wanted.

Observations have been made with a Celsius thermometer of the temperature of the well. At the mouth of the orifice, the thermometer marks 50 degrees; at the depth of 45 feet, the heat is regular, neither increasing nor diminishing with the variations above, and at the distance of 351 feet, the heat has increased to 60 degrees. The calculations in the books give an increase of one degree in the temperature, for every additional 100 feet of depth, so that at the depth of 5,000 feet, the heat is supposed to be so intense as to melt iron.

[The greater part of the above is extracted from the "Missouri Republican," we therefore do not take upon ourselves to endorse the opinion therein mentioned of a gradual rise of temperature on getting deeper from the earth's surface, such hypothesis is a favorite one among some geologists, but we must have something more than theory before we can affirm that the phenomenon last mentioned is sure to occur at the depth indicated.

Poison Fang of Serpents.

The instrument with which the cobra and other venomous serpents are armed in so deadly a manner, consists of several parts, namely, the tooth or poison fang, the movable stock or handle in which it is fixed, called the jaw, the muscles or moving powers of the jaw, the bag containing the deadly liquid called the poison sac, the pipe which carries the venom into the tooth or poison duct, and the squeezer or muscle that drives the venom from the bag, along the duct, through the tooth into the wound which the latter inflicts. The tooth is not implanted in a socket like ordinary teeth, but is firmly soldered, as it were, to the jaw bone, which commonly has no other tooth to support, and is singularly modified in size and shape, to allow of the movements requisite for the deep plunge of the tooth into the object aimed at. The tooth, in structure resembles what is called the canine tooth, which consists of a hard, pointed, long and slender cone, with a hollow base, and if we suppose such a slender and partly hollow cone to be rolled out flat, the edges then bent towards each other, and soldered together so as to form a canal open at both ends, we shall form a good idea of the general form and structure of a poison fang. The edges of the flattened tooth wheel we have supposed to be so approximated, are bent round the end of the poison duct, which closely adheres to and lines the canal, and the line of union of the two edges runs along the front and concave side of the slightly curved fang. The barrel aperture of the poison-canal is oblique and its opposite or terminal outlet is still more so, presenting the form of a narrow elliptical longitudinal fissure at a short distance from the fang's point, this is left solid and entire, and fit for the purpose of perforation. It is only the upper jaw that is so armed, and it is so formed that the upper jaw of the venomous serpent is not fixed, but plays or rotates backwards and forwards, having special muscles for those movements which, when they push forward the jaw bring the tooth attached to it into a vertical position, ready for action, and when they draw back the jaw, replace the tooth in a horizontal position, where it rests, with the point backwards, hidden in a bed of soft and slimy gum. The wound is inflicted by a blow rather than by a bite, the poison fangs, when erected, are struck like daggers into the part aimed at, and as the action of the compressing muscles of the bag is contemporaneous with the blow by which the wound is inflicted, the poison is, at the same moment, injected with force into the wound from the apical or terminal outlet of the perforated fang.

The New Silver Coin.

The weight of the new silver coinage authorized by the recent act of Congress, which goes into operation in June next, as compared with that coinage since the passage of the act upon the same subject in 1837, is as follows:

Silver.	Act of Jan., 1837.	Act of Feb., '53.
Dollar	412½ grains.	No change.
Half Dollar,	206¼ "	192 grains.
Quarter do.	103⅛ "	96 "
Dime,	41¼ "	38·40 "
Half Dime,	20⅝ "	19·20 "

Spiders' Thread.

Austrian papers state that a merchant of Vienna has lately presented to the Industrial Union of that capital the details of a series of experiments made by him to manufacture spiders' thread into woven tissues. The thread is wound on a reel, and two dozen spiders produce in six minutes a beautiful and delicate thread, two thousand feet in length. The stuffs manufactured are spoken of as being far superior to those of silk in beauty and delicacy of fabric.

Cotton in Africa.

Thirty varieties of cotton have been found growing spontaneously in Africa. A missionary says he has stood erect under the branches of a cotton tree in a Goulah village so heavily laden with bolls that it was propped up with forked sticks to prevent it from breaking under its own weight. The cotton was equal to that of any country. The natives manufacture cotton goods extensively.

Miscellaneous Items.

The block of marble for the Washington Monument, ordered by the Common Council of New York is now finished, and is larger than any that has yet been sent, being eight feet wide, and five feet six inches in height. It weighs about four tons. The design is the arms of the city of New York, cut in very high relief, surrounded by a beautiful wreath of oak and laurel leaves. The whole is surmounted by a large eagle standing on a globe. The block bears the following inscription in raised letters:—"Corporation of the City of New York." The border is composed of bundles of rods, encircled by a ribbon, to denote that in union there is strength. The cost of the block will be about $2,500.

The Pacific Railway in Missouri, has one of the most remarkable (though not the longest) tunnels in the world. For 930 feet in one part, and 400 in another, it is cut through the solid rock. The approaches to it, for long distances are cut fifty feet in depth, faced with the rock. The tunnel itself is sixteen feet high, arched over.

No less than 40,000 pine logs have been cut, and 25,000 have been put into the river at a point sixty-five miles from Potsdam, St. Lawrence Co. A quantity sufficient to make 25,000,000 feet of lumber, which, to be brought to market, will pay a toll of $9,000 to the State.

The annual amount of lead produced from the Wisconsin Lead Mines, is about 40,000,000 pounds, which, at five cents a pound (a low enough estimate now,) amounts to $2,000,000.

The Pennsylvania Railroad Company have reduced the rate of freight on bacon, beef, pork, whiskey, lard and lard oil, to 50 cents per 100 lbs. from Pittsburg to Philadelphia or Baltimore.

The Manchester (England) Chamber of Commerce have advanced a loan for experimenting in the culture of cotton in Trinidad, for which purpose a model farm is to be laid out.

The deliveries of tea recently in London, for one week were 509,218 lbs.

The ice merchants say there will be a large deficiency in the supply of that article the coming summer. Only about half the average annual crop has been stored. But about 100,000 tons are said to be stored. Last year it was 200,000 tons and over.

One Hundred Miles Per Hour.

"A Maine Yankee" announces through the "National Intelligencer," the invention of a form of road and improved locomotive, which, he says, will safely transport the mails and passengers at the rate of one hundred miles per hour! The writer further says he has been made acquainted with the details of these improvements, "which are so palpably correct in theory, and feasible in practice, that every civil engineer and railroad man will, on examination, at once recognize them as the desideratum, even to the extent of safety and speed above indicated." The next Congress, it is said is to be invited to secure its adoption, and give to the world the result of the first experiment.—[Exchange.

[Let us know the plan and then we can form some opinion of its correctness. It may be good and may be perfectly futile. We would state that 100 miles per hour have been run by a locomotive already.

The Great Chestnut Tree.

On one side of Mount Etna there is a famous chestnut tree, which is said to be one hundred and ninety six feet in circumference, just above the surface of the ground. Its enormous trunk is separated into five divisions, which gives it the appearance of several trees growing together. In a circular space formed by these huge branches a hut has been erected for the accommodation of those who collect the chestnuts.

New Iron Works.

The furnaces at the Mt. Savage establishment, Md., are now in blast, and the rolling mill continues, as it has done for some time, to turn out daily a large amount of superior rails. Over nine hundred hands are now kept busily employed, and the population of the place is not far from five thousand.

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TO CORRESPONDENTS.

J. C. S., of N. Y.—You appear to have hit on the Ericsson propeller; the single propeller, with an increasing pitch in the blades, has been the most successful: it is more simple and can be made cheaper; we prefer it. Sir G. C.'s ideas are to be found in the "London Mechanic's Magazine," in the discussion of the Stirling Air Engine, 1846.

N. R. M. & Co., N.Y.—Your water-cock will work well enough, if the column of feed water is of greater weight than the pressure of steam on the water in the boiler; if not, the water in the boiler would be forced up the pipe.

F. C., of Mich.—Your torpedo would no doubt be of great benefit, in cases of danger, if constructed as you propose, but as we do not know the plan, you will readily judge that we cannot say more about it.

A. M. S., of Ind.—You should write Messrs. Douglass, of Middletown, Conn., for such information as you solicit of us. Those odd back numbers we have not.

Subscribers at Mount Morris, Ill.—Your first letter came duly to hand with funds, but the name of the State was omitted both on the letter and on the envelope which covered it, so we knew not where to address the papers. Very many of our correspondents are too careless about mentioning the name of the State from whence they hail; by being more particular in this respect they will save themselves, as well as us, much trouble sometimes.

J. E. B., of N.—We have received yours but do not understand the case, because you have not explained it, and your letter does not clear up the circumstances; a plain and clear statement of the circumstances is the thing wanted in connection with the elucidation of the power of the engines and speed of the screw. Write cautiously and clearly.

A. J. M. D., of Geo.—Capt. Ericsson first built a stationary hot-air engine. You have got the receipt for glue by this time. The amount for the two patents would be about $1100.

H. D., of N. Y.—Alum water will tan your white skins; be sure and get the grease out of them; it requires practice to do so correctly.

H. M. S., of N. Y.—We do not see any novelty in your arrangement of windmill, and feel sure no patent can be obtained.

P. C., of Ky.—We keep Concentric Lathes constantly on hand, price $25: also a very compact mortising machine for $20 you can order at any time.

S. F., of Pa.—We are not acquainted with any better substance for smoothing the spokes than what you are using.

J. S. D., of Tenn.—There is nothing new or patentable in your alleged improvement in brakes; the principle is good but not new.

J. M., of Pa.—G. W. Terry, of New Haven, Ct., can furnish you with information about works on distilling and alcohol.

J. V. S., of Ohio.—We see nothing new or patentable in your device for feeding water to boilers.

O. F. M., of C. W.—No person can instruct you how to make malleable iron, you must learn the trade like any other profession.

L. B. C., of S. C.—We feel greatly obliged to you for the fine list of subscribers received from you, and regret that we are unable to furnish your club with the back numbers.

J. W. G., of Ind.—The edition of Minnifie's Drawing Book, now publishing in numbers, contains the same matter as the work originally published; price in numbers 25cts. each; bound, $3, exclusive of postage, which is about 30cts.

J. C., of N. H.—You will find several good receipts for making ink, black, blue, and red, in Vol. 7, Sci. Am., page 91.

D. G. S., of Pa.—Your paddle-wheel is too complicated to be of any practical benefit if put into use.

A. P., of N. J.—Your description is too concise to give a decided opinion upon the subject.

E. C. B., of N. Y.—We do not know where Jeffries' Marine Glue is obtainable, perhaps the following recipe will be a substitute: cautchouc, 15 grs.; chloroform, 2 oz.; mastic, 1-2 oz.; dissolve the two first ingredients, then add the mastic, and leave it to macerate for a week. Another glue or cement is made by mixing a handful of quicklime, with four ounces of linseed oil, washed, and boiled to a good thickness, and kept in the shade on tin plates to dry; it is afterwards rendered fit for use by boiling it over a fire.

L. R., of N. Y.—The magnet will not attach itself to the wheels.

Blast Pipe—Who can tell us what was the cause of the bursting of the blast pipe at the Crane Iron Works, Pa, recently?

E. A. F., of S. C.—We have received yours, and think as you do on the subject.

J. B. C, of Tenn.—Yours has come to hand and will receive attention.

Money received on account of Patent Office business for the week ending Saturday, March 26:—

J. A, of Ct., $25; H. R., of N. J., $30; T. F., of Ct., $20; J. H. B., of Ct., $30; J. B., of N. Y., $20; B. H. O., of N. Y., $30; A. C., of Ct., $25; F. O. D., of Pa., $20; R. C. W., of O., $55; J. M., of Del., $25; H. B., of Ct., $30; N. N. T., of N. Y., $30; H. C. H., of N. Y., $30; W. H, of N. Y., $30; R. S., of N. J., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday March 26:—

J. A., of Ct.; B. J., of N. Y.; A. L. McJ., of Ohio; S. A. & J. G., of R. I.; T. J A., of Ohio; A. C., of Ct.; S. W. & G., and R. M. D., of Mass.; J. T., of Ill.; J. B., of R. I.; R. S., of N. J.

ADVERTISEMENTS.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

MACHINE FOR MAKING RAILROAD Chairs—Having built one of my patent machines for making Railroad Chairs, and operated it in presence of several scientific mechanics, who pronounce it the most perfect machine ever made for the purpose. I am anxious to sell rights upon reasonable terms; 4000 perfect chairs can be made in one day, with only one-third the usual labor. ROBERT GRIFFITHS, Newport, Ky., opposite Cincinnati. tf

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ALDEN'S PATENT FAN BLOWER.—FOR Foundries, Smitheries, Rolling Mills, Steamboats, Ventilation, &c These Blowers possess many advantages over those of other construction, they will produce a stronger blast with less power, make less noise, and are less liable to get out of order, they are made entirely of metal, of the best material and workmanship. A printed report of a trial of them will be sent to those wishing it, by addressing the subscriber. Also Birkinbine's Patent Improved Hydraulic Ram and Force Pump. J. B. CHICHESTER, Agent, 338 Broadway, N. Y. 29 2*

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Taber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc.

CHARLES W. COPELAND,
29 13* Consulting Engineer, 64 Broadway.

FAMILY SCHOOL FOR BOYS—Easton, Conn. Number Limited to Twelve. Summer Session begins May 2nd. Rev. C. T. Prentice, Principal, References for circulars, etc.—S. H. Wales, Esq., Scientific American Office; Rev. S. J. Prime, 142 Nassau st; F. C. Woodworth, Esq., 118 Nassau st., and Capt. J. Brooks, Peck Slip, New York; George Sterling, and J. D. Johnson, Esqs., and Rev. Mr. Hewit, of Bridgeport, Conn.; Rev. Messrs. Atwater, of Fairfield, and Hall, of Norwalk, Conn. 29

WOODBURY'S PATENT PLANING Machines—I have recently improved the manufacture of my Patent Planing Machines, making them strong and easy to operate, and am now ready to sell my 24 inch Surfacing Machines for $700, and 14 inch Surfacing Machines for $650 each. I will warrant, by a special contract, that ONE of my aforesaid machines will plane as many boards or plank as two of the Woodworth machines in the same time, and do it better and with less power. I also manufacture a superior Tonguing and Grooving Machine for $350, which can be either attached to the Planing Machine, or worked separately. JOSEPH P. WOODBURY, Patentee, Border st, East Boston, Mass. 29tf

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TO ARTISTS, DESIGNERS, &c., one hundred dollars premium.—The government of the Massachusetts Charitable Mechanic Association having determined to procure a new diploma to be used at the Exhibition the present year, hereby offer a premium of one hundred dollars for the best original design of one Artists and others who may be disposed to compete, will please send their drawings to the secretary on or before Saturday the thirtieth day of April next. Each drawing must have some mark upon it, and must be accompanied by a sealed envelope, bearing a similar mark, and containing the address of the party sending it. For the design which shall be adopted by the executive committee the above premium will be paid. The other designs will be returned to their respective owners on demand. Any further information may be obtained by application to the Secretary. In behalf of the Government, FRED. H. STIMPSON, Secretary.
Boston, Feb. 23, 1853. 29 3*

E. OLIVER'S WIRE WORKS—No. 25 Fulton st, corner of Water. Locomotive Spark Wire, Patent Self-Setting Revolving Rat Traps; a new invented enclosed Coal and Ash Separator, and Wove Wire of every description. 28 4*

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tonguing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass.,
27 10* N. G. NORCROSS.

BLACK LEAD CRUCIBLES—The subscriber is now manufacturing and keeps on hand an assortment of the above crucibles for steel melting, brass and other metal workers, which are warranted equal to any now in use. Orders respectfully solicited by DANIEL ADEE, Agent, 107 Fulton street, N. Y. 27 4*

GEAR CUTTING—To order, executed with dispatch, straight, spiral, and bevel, at the machine shop No. 60 Vesey st, N. Y. G. W. WIGHT. 27 4*

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8 HORSE STEAM ENGINE FOR SALE—We offer for sale an Engine and Boiler, as follows 8 horse, horizontal, cylinder 7 inches bore, 16 inch stroke, on a cast-iron bed, fly wheel, driving pulley, governor, pump, pipes, etc.; has never been used. The Boiler has been used by the maker about one year. It is cylinder, horizontal, 16 feet long, 30 inch diameter, has a steam chamber, try-cocks, check and safety valves: price, $600. Address
MUNN & CO.

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash Further particulars can be had by addressing as above, post-paid. 28tf

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THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid. 28tf.

PARKER'S PATENT METHOD OF BANDING Pulleys.—Portable Sawing Machines, made separate either for circular or scroll sawing, may be seen at No. 110 East 13th street, near Third avenue, where any information will be given as to its application to other machinery. 28 2*

PORTABLE STEAM ENGINE—Any one having for salo a good second-hand Portable Steam Engine and Boiler, of from 3 to 7 horse-power, will do well to address. C. H. WARNER,
28 2* Macon, Ga.

TO SASH OR CABINET MAKERS ABOUT to commence business.—A couple of young men acquainted with working sash or cabinet machinery possessing a small capital can hear of a good chance for business in a large and flourishing city, where there is no competition, and prices from 50 to 100 per cent higher than in New York or Boston. Address J. E. TURNBULL, Saint Johns, New Brunswick. 28 4*

BOSTON BELTING COMPANY—No. 37 Milk street, Boston, Manufacturers of Machine Belting, Steam Packing, Engine and Conducting Hose, and all other articles of Vulcanized India Rubber, used for mechanical and manufacturing purposes. 28tf

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PORTABLE STEAM ENGINES—The subscriber is now prepared to supply excellent Portable Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, say 1, 2, 2 1-2, 3, 4, 6, 8, and 10 horse-power, suitable for printers, carpenters, farmers, planters, &c, they can be used with wood, bituminous, or hard coal; a 2 1-2 horse engine can be seen in store, it occupies a space 5 feet by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. S. C. HILLS,
27eotf Machinery Agent, 12 Platt st, N. Y.

THE PROPRIETORS OF JAMES RENTON'S Patent, for the manufacturing of wrought iron direct from the ore, are desirous of introducing the invention generally, and invite parties who may wish to negociate for rights for States and counties, or for furnaces, to make immediate application, and to visit the works at Newark and examine for themselves; they are disposed to make liberal arrangements with responsible parties who make an early application. Applicants for rights in the State of New Jersey may address Hon. J. M. Quinby, President of the American Iron Co. Inquiries or application for other States may be made to the subscribers. The furnace which is now in operation at the American Iron Co's works, corner of Parker and Passaic sts., Newark, N. J., is attracting considerable interest. Gentlemen from all parts of the county have visited the works, examined the operation, and express the highest commendation of it. JAMES RENTON, A. H. BROWN, Proprietors, Newark, N. J. 26 5*

MAXWELL IRON WORKS, 259 Bowery, N. Y. Steam engines, lathes, drilling and planing machines, machinists' tools of every description, printing, lithographic and copperplate presses, bookbinders' cutting and embossing presses, rolling machines and squaring shears, iron backing presses, improved standing press, proof and transfer presses, cylinder newspaper press, self-inking apparatus, and every article in the press line, necessary in a priniing office or bindery, made to order, on reasonable terms. All kinds of repairing done with the greatest despatch. N. B—Steam fire pumps made 10 per cent. cheaper than at any other establishment. 26 4*

LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati O. 27 6m*

SPILLARD AND DODGE—Arch Street Hall Brass Foundry, and manufactory of plumbers' brass; water, steam, and gas cock constantly for sale upon reasonable terms; 213 Arch street, Philadelphia, Pa. 25 8*

AARON KILBORN, No. 4 Howard st, New Haven, Conn., manufacturer of Steam Engines, Boilers, &c. Noiseless fan blowers and machinery in general 25 10*

SAND PAPER, GLUE—Excelsior Sand and Emery Paper, ABBOT'S Manilla Sand and Match Papers. Emery Cloth, Emery, Emery Grit, Pumice Stone ground and in lump, of very superior quality; also Glue of all grades, and in quantities to suit purchasers at the lowest manufacturers' prices, for sale by WILLIAM B. PARSONS, 284 Pearl street. 24 8*

COTTON MACHINERY—Of the most approved plans, from the best shops in the country:—drawings, specifications, and general arrangements for the machinery, furnished at the lowest rates, by W. B. LEONARD, and E. W. SMITH, 75 Merchants' Exchange, New York. 23tf

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WOODWORTH PLANING MACHINES, ON hand and manufactured to order, of superior quality, at reduced prices, warranted perfect. Also steam engines and other machinery, by JOHN H. LESTER, 57 Pearl street, Brooklyn, L. I. 22 8*

E. HARRISON'S UNEQUALLED FLOUR AND GRAIN MILLS—Their frames and hopper are cast-iron, and the stones French Burr, 30 inches in diameter; grinds of wheat and corn 20 bushels an hour, weighs fourteen hundred pounds. These mills, constructed upon a new principle, have become widely known, and are producing a revolution in milling. Cash orders promptly supplied, and the mills warranted to work in the best manner. The patentee offers $500 reward for any mill which will do an equal amount of work with the same power and dressing. Made and for sale at the corner of Court and Union streets, New Haven, Conn, by
20 12* EDWARD HARRISON.

BEARDSLEE'S PATENT PLANING Tonguing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany. 15tf

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W. P. N. FITZGERALD, Counsellor at Law has recently resigned the office of principal Examiner of Patents, which he has held for many years, and is ready to assist, professionally, in the preparation and trial of patent causes before the U. S. Courts in any of the States, and before the Supreme Court of the United States. He also acts as Counsel in cases before the Patent Office, and on appeals therefrom, but does not prepare applications for Patents Office corner of E and 8th sts., Washington, D. C. 18 tf

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MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 27tf

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A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 16tf

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LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

PAINTS, &c. &c.—American Atomic Drier Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
27tf Painters and Chemists.

CHILDS, TAINTER & CO., Worcester, Mass., Builders of Daniel's Planers, with Read's feed motion, and J. A. FAY & CO's. celebrated Woodworking Machinery. 24 8*

BLACK LEAD CRUCIBLES and Melting Pots of any form, size and quality, made to suit customers, for 3 cents per number, and warranted equal to any of the kind manufactured in the world, by D. H. PURINTON, Somerset, Mass. 23 10*

PATENT DRAFT BOARDS—With extension scales, sheet fasteners, and T rule. See Reports of Worcester Fair, Maryland State Fair, &c. &c, with their awards. $10 complete. Sent by express. Address, post-paid, CHAMBERLIN & CO., Pittsfield, Mass. 16tf

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FOR SALE—A new Horizontal Steam Engine, complete, with pumps 7 inch bore, 2 feet stroke, wel suited for a saw mill; price $325; also one second-hand, nearly new, perpendicular, in iron frame work, complete, with pump and governor, 4 horse power, price, $175: all warranted to work well and of sound materials. Address C. SIMON, Louisville, Ky., (Main between 11th and 12th sts) 29 2*

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This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

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C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.

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J. D. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S. Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Serew Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE,
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PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

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SCIENTIFIC MUSEUM.

Deepening the Rivers Clyde and Hudson.

All the steamships of the Cunard Line were built on the River Clyde, in Scotland, and received their engines at the City of Glasgow, at the extremity of navigation on that river. The Atlantic screw steamships, which run from Philadelphia to Liverpool, and the "Glasgow," which runs between New York and Glasgow, were built and received their engines at the same place. The river is a very insignificant one at Glasgow, so far as it respects the quantity of water discharged into it, and is no more to be compared with the Hudson, than is the Mohawk. It is not insignificant, however, in the lesson which it might teach the people of Albany, regarding the deepening of the Hudson, to promote its navigation for vessels of heavy tonnage. As promised by us in the Scientific American of last week, we will proceed to present an outline of what has been done on this river, which will be found, to sustain the views of Mr. Battell, with respect to improving the navigation of the Hudson. In 1750 there were only three feet of water in the channel of the river Clyde; in 1850 there were 17½ feet of water. In 1758 an act of Parliament was obtained to make a lock to secure 4½ feet of water up to Glasgow, but it never was made, for a plan of systematic improvement was laid out by the celebrated James Watt, which was soon acted upon, and from that day to this the improvement in the channel of the river has steadily progressed. There were at that time a number of fords or sand banks in the river, and at Glasgow there was one, on which there were but 15 inches water, and about 3 feet spring tides. The lowest ford was at Dumbuck, 12 miles below Glasgow. It was deepened in the autumn of 1770 from 2 feet at low water to a depth of six feet, at an expense of £2,300 ($11,300). The great object of this deep cut was to allow a larger body of tidal water up the river—the next step being by a jetty of stones run out from the shore to secure the ebbing of the waters through the new cut. The largest vessels now sail where once was this ford, which formed the outermost link of the old Roman Empire.

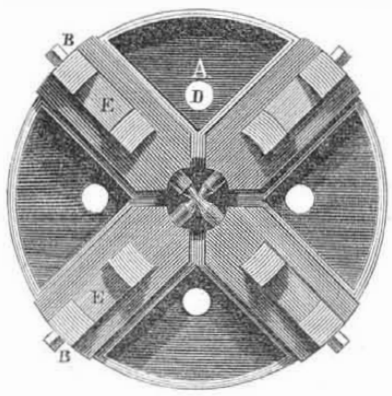
"The improvements were commenced by deepening at the fords and running jetties of loose stones out from the shore to low-water mark; these guided the water into the channel, which was thereby deepened. Continuous dykes, parallel with the current, were then formed, by which a uniform depth was maintained; and in 1807 a tracking path was formed along the south dyke from Renfrew up to Glasgow, 24½ miles of these were dykes formed, and cost from 25s. to 30s. per lineal yard of dyke. In 1824 the tides and freshets had scoured away about two million cubic yards, and gained a depth of 13 feet. In 1824 the steam dredging machine was introduced, being its first application to a river in Scotland, and since then about three million cubic yards of stuff have been lifted, besides many tons of stones by means of diving bells. In 1842–5 channels were cut through Port-Glasgow and other banks, and 420,000 cubic yards removed.

The water above Glasgow has, in suspension about 22,000 cubic yards of fine stuff annually. In the harbor alone about 80,000 cubic yards of silt accumulate annually, and about 90,000 in the river, including an annual accumulation at Bowling of 60,000 cubic yards, which costs the trustees about £1200 per annum to remove. The whole cost of maintaining the depth is upwards of £8000 a-year; the average price being, lifting, 8d; depositing, 4d—equal to 1s. per cubic yard."

The foregoing extracts marked as quoted, are from a paper on the subject by W. Campbell, C. E. The facts prominently set forth are, that by removing the fords or sand banks, and dyking or walling up, as proposed by Mr. Battel, a river which at one time, only admitted sloops and coal boats of about 100 and 200 tons, now allows ships of 2000 tons burden to sail up twelve miles above the place (Dumbuck) where there were only 2 feet of water 100 years ago. The price of dredging and keeping the river clear, is given in Sterling currency, which is still taught (whether it be wise or not) in our schools, and will be understood, but we could not afford to do the same work here at the same price. But even allowing the people of Albany to put up the figures one half more, they would find them all against the building of a new and expensive ship canal. Let them get powerful dredging boats and build walls to narrow the channel, and then not fear, but a most wonderful change for the better will be effected in the Hudson River.

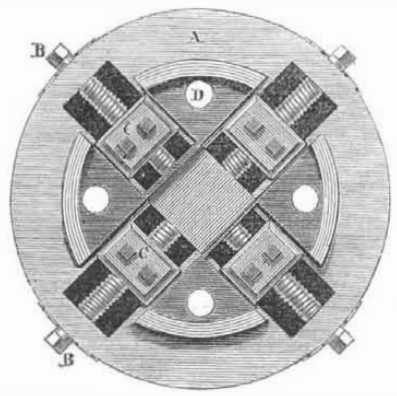
Hogle's Patent Universal Chuck.

FIG. 1



The annexed engravings are a face view (fig. 1), and a back view (fig. 2) of the improved chuck, invented by S. S. Hogle, and for which a patent was granted in November, 1841, but which has not been introduced into this region, and which is but very little known generally—not so much as it should be. E E are the jaws, they are worked by the screws, B B. C C are the nuts on the back side. Every opposite jaw is secured on the same screw, and is worked by a simultaneous motion, except that the opposing screws on the same spindle are right and left. A is the circle plate of the chuck, and D are bolt openings in the back plate. The shanks of screws, B B, are tapered at the centre of the chuck, so that one works and rolls on the other, which allows them to cross in a very small space. It is calculated to chuck articles of a very large size and articles of only three-fourths of an inch in diameter. It is strong and simple, and any chips that may gather in the middle, will fall out on the back side under the screws. It is adapted for centric and eccentric chucking. The engravings will at once show the machinist the difference between this and other chucks, and how each opposing pair of jaws can approach near to and recede from the centre as may be desired. Instead of having a screw for each jaw or sliding gripe piece, as in the old universal chuck, this one has two screw shafts, crossing one another at right angles, with a right and left-

FIG. 2.



handed screw on each, so that by the turning of each screw shaft, two jaws are made to approach or recede from one another in their radial grooves. To increase the capacity of the chuck separate jaws are put on the chuck, the one fitting into the mortise of the other, and secured by screws.

The assignee of the patent for this chuck, in this state, is Thomas Ashley, of Waterloo, Seneca Co., N. Y., who manufactures the article, and from whom more information may be obtained by letter.

Experiments have been lately made at Berlin with cannon having rifle bores, and loaded at the breech with a conical missile, which is hollow, and contains powder. These experiments are said to be very successful. With 1½ pounds of powder a missile was thrown more than 6,000 feet.

Carbonic Acid Gas.

Carbon exists in a variety of forms—charcoal, anthracite lamp-black, diamond, are all different forms or states of the same element. There is but a small amount of carbon in the mineral world—none, indeed, but what is supposed to have been of organic origin. But in the organized world it is a fundamental and universal element. When wood or coal burns or decays, or when living things perish, their carbon combines with oxygen, and the substance formed is known as carbonic acid. This is a universal product of combustion, whether in the ungovernable conflagration or the measured respiration of the living animal. Carbonic acid is a heavy gas—it extinguishes fire and destroys all animal life. If an animal attempts to breathe it pure, there is spasmodic closure of the glottis and the animal dies as speedily as if strangled with a cord. It breathed when diluted with 90 per cent. of air, it acts as a narcotic poison, inducing, sleep, torpor, and death. Carbonic acid gas and steam are employed in the Fire Annihilator to extinguish flame. There is a small portion of carbonic acid gas in the atmosphere, namely, one gallon diffused through 2,000 gallons of air. This may be increased ten-fold or to one half per cent—more than this is injurious. A man exhales about 20 cubic feet of carbonic acid per day, which would therefore vitiate or spoil 4,000 cubic feet of air each day, or equal to all that is to be found over a space of 56 square feet to the top of the atmosphere annually. Larger quantities still are generated by combustion and decay. Water has a strong attraction for carbonic acid and absorbs much of it. It then acquires new properties, particularly the power of dissolving a great number of minerals.

A Rival to Tea.

The "Singapore Free Press" recommends the use of the coffee leaf as a substitute for the berry. The writer appears to be an English planter of the Dutch settlement of Padang, in Sumatra, where the coffee plant has been cultivated for several generations, and where it is now produced in larger quantity, and of better quality than in any country of the Malayan Islands, Java excepted. The coffee plant is an evergreen large shrub, which yields a profusion of leaves, and bears fruit for about twenty years. The leaf, and even the twigs, have, in a minor degree, the same stimulating and exhilarating property as the berry, and its habitual use by the natives of the country, agricultural Malays of very simple habits, and little amenable to innovation, shows that they at least find the coffee leaf to make a wholesome and agreeable beverage. The introduction of this article into our consumption would, we cannot help thinking, be a benefit to the poor, and to our colonial planters.

In order to render coffee leaves marketable for European consumption, the best mode of preparation will consist in subjecting them to the same kind of manipulation as tea undergoes; and for this purpose it would probably be expedient, at first, to employ, for instruction, Chinese skilled in the art, such men as Mr. Fortune lately brought from the northern provinces of China to Upper India. The leaves of coffee, neither fleshy nor succulent, are even more easily dried than those of tea, and being larger and more abundant, while the plant itself is more easily reared than tea and embraces a much wider geographical range, it is certain they might be sold at a lower price than the poorest Bohea. It may be added that the leaves so prepared would not be amenable to the charge of adulterations so often urged against the ground berry.

The Burning Coal Mountain.

That portion of the Broad Mountain, called the "Fiery Mountains," from the fact of the anthracite coal at that point being on fire—which has been burning for the last fifteen years, is situated about five miles from Minersville and fifteen from Schuylkill Haven. It is now considered a very dangerous experiment to travel over the mountain, as it is supposed that in many places the surface is a mere superficial crust or shell, the coal having been consumed up to the surface, and hence the least pressure thereon, it is presumed, might break through and let the adventurer down into the fiery chasm below. At the base of the mountain, in one place, a stream of water almost boiling hot, comes out. The surface of the mountain presents a desolate appearance as far as the eye can reach. The mountain is either cracked, burned or broken into enormous and fearful depths by the approach of the fires to the upper stratum; roots and trunks of the lofty trees are charred and blackened, mingling their pyroligneous odor with the sulphurous vapors from the hot caves and crevices around. The calcined bones of birds, reptiles, and small quadrupeds, lie here and there, half mixed with the mineral ashes, to fill up the blasted view, while amidst the vast scene of desolation may be seen a solitary wood-flower, springing from this perpetual "hot-bed," and presenting, in the uncongenial atmosphere, a mockery of bloom.

Astor Library.

The funds and property of the institution are valued at $450,000. The cost of the building and site $70,000, and the expenditure for books thus far $75,364. More than 60,000 volumes have been collected, and Dr. Cogswell is now in Europe, authorized to expend $25,000 in the purchase of additional works. Commencing with about eighty thousand volumes, free from debt, and having a vested fund of $180,000, the interest of which is to be steadily applied to enlarging the collection, this must ultimately become one of the largest libraries in the world.

Butter.

Forty thousand pounds of butter, recently imported into Boston from Ireland, were taken back in the Europa, which sailed on the 2nd ult., not having commanded a sufficient price.

LITERARY NOTICES.

THE COLD GRAPERY—By W. Chorlton; 12mo, pp. 93; published by J. C. Riker, 129 Fulton street, N. Y. This is a useful little manual for the vine grower, in which the use of glass houses, but without heat, is ably advocated by the author a practical gardener who gives directions as to the course to be pursued with diagrams of the different roofs that are and ought to be employed. Works like this, that are written by really practical men, are far more to be trusted than the pseudo guides of pretended agriculturists who more often mislead the enquirer than direct him in the right path. Really practical works, written by plain practical men, are of the highest value, but the trashy works of scientific quacks in every branch of knowledge, are worse than useless. This work is to be placed in the former category, and is cheap at any price for real knowledge is worth its weight in gold.

"Graham's American Magazine," for April, is enlarged to 144 pages, and is one of the very best literary publications in the country. The articles, original and selected, are from the first authors. Dewitt & Davenport, agents, Tribune Buildings, New York.

MECHANICS

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